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FILE 'REGISTRY' ENTERED AT 16:05:14 ON 18 AUG 2006
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(FILE 'HOME' ENTERED AT 11:06:28 ON 18 AUG 2006)

FILE 'HCAPLUS' ENTERED AT 11:06:54 ON 18 AUG 2006

E US20040009399/PN

L1 1 SEA US20040009399/PN

FILE 'REGISTRY' ENTERED AT 11:08:02 ON 18 AUG 2006

L2 25 SEA (110-71-4/BI OR 111-96-6/BI OR 116-15-4/BI OR

L3 1 SEA 9003-56-9/RN

L4 1 SEA 7704-34-9/RN

L5 41 SEA (LI(L)S)/ELS (L) 2/ELC.SUB

SAV L5 WEI870LIS/A

FILE 'HCAPLUS' ENTERED AT 11:48:50 ON 18 AUG 2006

L6 238042 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
OR GALVAN? OR WET OR DRY OR PRIMARY OR SECONDARY) (2A) (CEL
L OR CELLS)

L7 137600 SEA L4

L8 4396 SEA (SULFUR OR SULPHUR OR S) (3A) L6

FILE 'REGISTRY' ENTERED AT 12:00:02 ON 18 AUG 2006

L9 1 SEA "ACRYLONITRILE-BUTADIENE COPOLYMER"/CN

L10 1 SEA "STYRENE-BUTADIENE COPOLYMER"/CN

FILE 'HCAPLUS' ENTERED AT 13:41:28 ON 18 AUG 2006

L11 235963 SEA L3 OR ABS OR ACRYLONITRILE(A) BUTADIENE(A) STYRENE

L12 35052 SEA L9 OR (ACRYLONITRILE(A) BUTADIENE OR AB) (2A) (POLYM?
OR COPOLYM? OR HOMOPOLYM? OR RESIN?)

L13 63725 SEA L10 OR (STYRENE(A) BUTADIENE OR SB) (2A) (POLYM? OR
COPOLYM? OR HOMOPOLYM? OR RESIN?)

L14 996 SEA L5

L15 799 SEA L8 AND (L7 OR L14)

L16 21 SEA L15 AND (L11 OR L12 OR L13)

L17 36 SEA L8 AND (L11 OR L12 OR L13)

FILE 'REGISTRY' ENTERED AT 14:06:01 ON 18 AUG 2006

L18 10692 SEA FLPO/PCT

FILE 'HCAPLUS' ENTERED AT 14:06:27 ON 18 AUG 2006

L19 94663 SEA L18 OR FLUORI? (2A) (POLYM? OR COPOLYM? OR HOMOPOLYM?
OR RESIN?)
L20 QUE BINDER?
L21 60752 SEA BUTADIENE? (2A) (POLYM? OR COPOLYM? OR HOMOPOLYM? OR
RESIN?)
L22 10 SEA L8 AND L21
L23 17 SEA L17 AND L19
L24 6 SEA L22 AND L19

FILE 'REGISTRY' ENTERED AT 14:35:23 ON 18 AUG 2006

L25 2 SEA BUTADIENE/CN
D STR 1-2
SEL L25 2 RN
EDIT E1-E1 /BI /CRN
L26 10153 SEA 106-99-0/CRN
L27 10078 SEA L26 AND PMS/CI
L28 15 SEA C3F6/MF
D STR 1-5
SEL L28 3,4 RN
EDIT E1-E2 /BI /CRN
L29 0 SEA (173693-32-8/CRN OR 175520-04-4/CRN)
L30 1982 SEA 116-15-4/CRN
L31 2353 SEA 75-38-7/CRN
L32 656 SEA L30 AND L31

FILE 'HCAPLUS' ENTERED AT 15:08:27 ON 18 AUG 2006

L33 141169 SEA L27
L34 5670 SEA L32
L35 258377 SEA (POSITIVE? OR POS#) (A)ELECTROD## OR CATHOD##
L36 2529 SEA (SULFUR OR SULPHUR OR S OR L4) (3A)L35
L37 4400 SEA (SULFUR OR SULPHUR OR S OR L4) (3A)L6
L38 417 SEA L14 AND L6
L39 235 SEA L14 AND L35
L40 53 SEA (L36 OR L37 OR L38 OR L39) AND (L11 OR L12 OR L13)
L41 39 SEA (L36 OR L37 OR L38 OR L39) AND (L33 OR L21)
L42 58 SEA L40 OR L41
L43 4013 SEA (LITHIUM OR LI) (3A) (SULFUR OR SULPHUR OR S OR L7)
L44 QUE EMULSION?
L45 22 SEA L42 AND L43
L46 2 SEA L45 AND L44
L47 2 SEA L46 AND (L19 OR L34)
L48 2 SEA L42 AND L44
L49 2 SEA L46 OR L47 OR L48
L50 90 SEA L20 AND L43
L51 79 SEA L50 AND L6
L52 15 SEA L51 AND (L21 OR L33)

L53 11 SEA L52 AND (L19 OR L34)
 L54 20 SEA L45 NOT L49
 L55 1 SEA L53 NOT (L49 OR L54)
 L56 0 SEA L52 NOT (L49 OR L54 OR L55)
 L57 189 SEA L20 AND (L36 OR L37)
 L58 19 SEA L57 AND (L21 OR L33)
 L59 12 SEA L58 AND (L19 OR L34)
 L60 2 SEA L59 NOT (L49 OR L54 OR L55)
 L61 3 SEA L58 NOT (L49 OR L54 OR L55 OR L60)
 L62 31 SEA L42 NOT (L49 OR L54 OR L55 OR L60 OR L61)

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 16:05:22 ON 18 AUG 2006
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=> d l49 ibib abs hitstr hitind 1-2

L49 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:39670 HCAPLUS
 DOCUMENT NUMBER: 140:79840
 TITLE: Binder for a **lithium-sulfur battery cathode**
 INVENTOR(S): Kim, Seok; Jung, Yongju; Han, Ji-Seong; Kim, Jan-Dee
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 9 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004009399	A1	20040115	US 2003-614870	20030709
KR 2004005439	A	20040116	KR 2002-40006	20020710

MEI HUANG EIC1700 REM4B28 571-272-3952

08/18/2006

JP 2004047462 A2 20040212 JP 2003-166410

200306
11

CN 1471184 A 20040128 CN 2003-145326

200307
03

PRIORITY APPLN. INFO.:

KR 2002-40006

A

200207
10

AB Disclosed is a binder for a **lithium-sulfur battery** including a **butadiene-based copolymer**. The binder exhibits chem. resistance to polysulfides, is stable at battery working temps., forms an **emulsion** in org. solvents and exhibits high adherence to pos. active materials and electrodes used in the **lithium-sulfur battery**. The disclosed binder compns., due to their high adherence to pos. active materials allow for higher relative amts. of pos. active materials to be used in the battery resulting in a high capacity **lithium-sulfur battery**.

IT 9003-56-9

RL: MOA (Modifier or additive use); USES (Uses)
(abs rubber, binder for **lithium-sulfur battery cathode**)

RN 9003-56-9 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

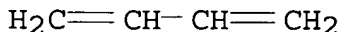
CMF C3 H3 N



CM 2

CRN 106-99-0

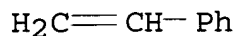
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



IT 9011-17-0 24981-14-4, Ethene, fluoro-homopolymer
25038-71-5, Ethylene-tetrafluoroethylene copolymer
RL: MOA (Modifier or additive use); USES (Uses)
(binder for lithium-sulfur battery
cathode)

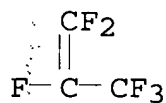
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
(9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4

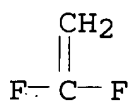
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2

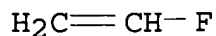


RN 24981-14-4 HCAPLUS

CN Ethene, fluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

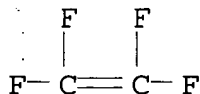
CRN 75-02-5
CMF C2 H3 F



RN 25038-71-5 HCAPLUS
CN Ethene, tetrafluoro-, polymer with ethene (9CI) (CA INDEX NAME)

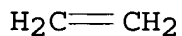
CM 1

CRN 116-14-3
CMF C2 F4



CM 2

CRN 74-85-1
CMF C2 H4



IT 9003-18-3

RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, binder for **lithium-sulfur**
battery cathode)

RN 9003-18-3 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

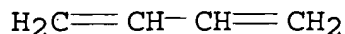
CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder for **lithium-sulfur battery cathode**)

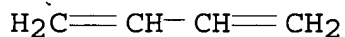
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

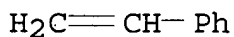
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-62

ICS H01M004-58; C08F036-06; C08F036-14; C08F036-16

INCL 429217000; 429218100; 526291000; 526335000; 526339000; 526340000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **lithium sulfur battery cathode**
binder

IT Adhesion, physical

Battery **cathodes**

Binders

(binder for **lithium-sulfur battery**)

cathode)

IT **ABS rubber**
Nitrile rubber, uses
Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(binder for **lithium-sulfur battery cathode)**

IT Secondary batteries
(**lithium**; binder for **lithium-sulfur battery cathode)**

IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(viscosity control agent; binder for **lithium-sulfur battery cathode)**

IT **9003-56-9**
RL: MOA (Modifier or additive use); USES (Uses)
(**abs rubber**, binder for **lithium-sulfur battery cathode)**

IT 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane 646-06-0,
1,3-Dioxolane 7704-34-9, **Sulfur**, uses 33454-82-9,
Lithium triflate
RL: DEV (Device component use); USES (Uses)
(binder for **lithium-sulfur battery cathode)**

IT 116-15-4 9011-17-0 24981-14-4, Ethene,
fluoro-homopolymer 25038-71-5, Ethylene-
tetrafluoroethylene copolymer 156395-51-6
RL: MOA (Modifier or additive use); USES (Uses)
(binder for **lithium-sulfur battery cathode)**

IT **9003-18-3**
RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, binder for **lithium-sulfur battery cathode)**

IT **9003-55-8**
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder for **lithium-sulfur battery cathode)**

IT 9002-89-5, Polyvinyl alcohol 9002-98-6 9003-01-4, Polyacrylic
acid 9003-05-8, Polyacrylamide 9003-39-8, Polyvinyl pyrrolidone
9004-32-4, Carboxymethyl cellulose sodium salt 9004-34-6D,
Cellulose, deriv. 9004-62-0, Hydroxyethyl cellulose 9004-65-3,
Hydroxypropyl Methyl cellulose 9004-67-5, Methyl cellulose
25322-68-3, Peo
RL: MOA (Modifier or additive use); USES (Uses)
(viscosity control agent; binder for **lithium-sulfur battery cathode)**

L49 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1992:430545 HCAPLUS
DOCUMENT NUMBER: 117:30545
TITLE: Manufacture of battery electrodes
INVENTOR(S): Arai, Kenji; Yoshino, Akira
PATENT ASSIGNEE(S): Asahi Kasei Kogyo K. K., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04051459	A2	19920219	JP 1990-157556	19900618
JP 2872354	B2	19990317	JP 1990-157556	19900618

PRIORITY APPLN. INFO.:
19900618

AB Aq. dispersion of carbonaceous powder and non-fluoride polymers are applied on a substrate and dried to give a battery electrode. Preferably, the carbonaceous powder has av. particle diam. 0.1-50 μm . A mixt. of needle coke, polyethylene emulsion, and CMC was mixed with 0.1N NH_4OH and coated on a Ni foil to obtain an anode for use in batteries with a $\text{Li}_{1.03}\text{Co}_{0.95}\text{Sn}_{0.04202}$ cathode.

IT 9003-55-8

RL: USES (Uses)

(rubber, carboxy-contg., anodes contg. needle coke and, for secondary lithium batteries)

RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6

$\text{H}_2\text{C}=\text{CH}-\text{CH}=\text{CH}_2$

CM 2

CRN 100-42-5

CMF C8 H8

 $\text{H}_2\text{C}=\text{CH}-\text{Ph}$

IC ICM H01M004-04

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 9002-88-4, Polyethylene 25608-26-8, Polyethylene

RL: USES (Uses)

(anodes contg. needle coke and, for secondary lithium
batteries, Chemipearl S-100)

IT 9003-55-8

RL: USES (Uses)

(rubber, carboxy-contg., anodes contg. needle coke and, for
secondary lithium batteries)

=> d 154 ibib abs hitstr hitind 1-20

L54 ANSWER 1 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:706706 HCAPLUS

DOCUMENT NUMBER: 145:127692

TITLE: Active mass composition for secondary lithium
battery anode, anode prepared from the
composition and the battery containing the anode
Koo, Chang Il

INVENTOR(S): Samsung Sdi Co., Ltd., S. Korea

PATENT ASSIGNEE(S): Repub. Korean Kongkae Taeho Kongbo, No pp. given
SOURCE: CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2004036459	A	20040430	KR 2002-65657	200210 26

MEI HUANG EIC1700 REM4B28 571-272-3952

08/18/2006

PRIORITY APPLN. INFO.:

KR 2002-65657

200210

26'

AB An active mass compn. for a secondary lithium battery anode is provided to improve binding capacity, charging-discharging properties and battery capacity of a lithium battery which contains the anode plate prepd. from the compn. The compn. comprises an anode active mass, a binder and a solvent, wherein the binder is a mixt. of sulfur (S_x) (x = integer 1-8) and ≥1 polymer resin selected from **styrene-butadiene** rubber, butadiene rubber, isobutylene-isoprene rubber, acrylate butadiene rubber, acrylonitrile-butadiene rubber, polychloroprene, polyisobutylene butyl rubber, ethylene-propylene rubber, chlorosulfonated polyethylene, ethylene-vinyl acetate copolymer, ethylene-acrylate copolymer, polyperfluorovinyl Me ether, polyperfluorobutyl acrylate and polyhexafluoropropylene oxide.

IT **9003-55-8**
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; anodes contg. mixts. of sulfur and polymer resins as binders for secondary lithium batteries)

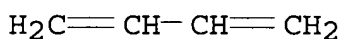
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

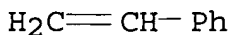
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery anode binder
sulfur polymer resin

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)

(styrene-butadiene rubber; anodes contg. mixts. of sulfur and polymer resins as binders for secondary lithium batteries)

L54 ANSWER 2 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:105597 HCAPLUS

TITLE: Inorganic Electrolyte Salt for Lithium Batteries

AUTHOR(S): Gorkovenko, Alexander; Jaffe, Stephen

CORPORATE SOURCE: Material Methods, Irvine, CA, 92618, USA

SOURCE: Abstracts, 40th Western Regional Meeting of the American Chemical Society, Anaheim, CA, United States, January 22-25 (2006), WRM-069. American Chemical Society: Washington, D. C.
CODEN: 69HUVH

DOCUMENT TYPE: Conference; Meeting Abstract

LANGUAGE: English

AB The highest specific energy rechargeable battery available today is the Lithium-Ion. Today this technol. is mature, and its max. specific energy will be about 200 Wh/kg. Primary Lithium batteries offer more. Li/thionyl chloride can deliver 550 Wh/kg and high rates. The **abs.** champion, Li/CF_x, is 820 Wh/kg, at low rates. More specific energy is needed from secondary batteries. Next generation of lithium batteries is based on the use of **lithium** metal anodes and **sulfur** contg. liq. **cathodes**. The theor. limit of the **Li/S** pair is 2450 Wh/kg, that is 5 times more than the C/LiCoO₂, Li ion pair, (510 Wh/kg). Novel components of lithium batteries electrolytes are needed to improve specific energy, reduce irreversible capacity loss, improve charge efficiency and increase lithium cycling efficiency in secondary batteries. LiPF₆ and LiBF₄ are the main Li salts of secondary and primary batteries. New Li salts with anode protecting properties are needed. The novel inorg. lithium salt, LiMM was synthesized, characterized and tested in rechargeable lithium batteries. This lithium salt is highly sol. in org. solvents with cond. max. of .apprx. 7 mS/cm at RT. The salt is thermally stable in org. solvents up to 200 °C. Ionic cond. and d. of LiMM/PC/DME electrolytes at RT is presented in the Table 1. Results of LiMM synthesis and testing are discussed.

L54 ANSWER 3 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:976041 HCAPLUS

DOCUMENT NUMBER: 143:269627

TITLE: Secondary **lithium/sulfur**
batteries providing high discharge capacity

INVENTOR(S): Koga, Hideyuki; Itaya, Shoji; Dojo, Kazunori;

PATENT ASSIGNEE(S): Miyake, Masahide; Fujimoto, Masahisa
SOURCE: Sanyo Electric Co., Ltd., Japan
Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005243518	A2	20050908	JP 2004-53879	20040227

PRIORITY APPLN. INFO.: JP 2004-53879

20040227

AB The **batteries** comprise **cathodes** contg. **sulfur (s)**, elec. conductors, and binders contg. styrene-butadiene rubbers, wherein polytetrafluoroethylene is included in the binders, too. The batteries show high discharge capacity d. even if the electrode-filling d. is high.

IT **7704-34-9, Sulfur**, uses
RL: DEV (Device component use); USES (Uses)
(**cathode** active mass; secondary **Li/S**
battery contg. styrene-butadiene rubber and
polytetrafluoroethylene as cathode binders)

RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT **9003-55-8**
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, binder; secondary **Li/S**
battery contg. styrene-butadiene rubber and
polytetrafluoroethylene as cathode binders)

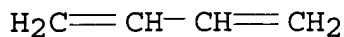
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

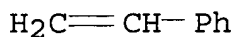
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-62

ICS H01M004-38; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **lithium sulfur battery cathode**

binder styrene butadiene rubber; polytetrafluoroethylene binder

lithium sulfur battery

IT Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)

(binder; secondary **Li/S battery**

contg. styrene-butadiene rubber and polytetrafluoroethylene as cathode binders)

IT **Battery cathodes**Secondary **batteries**(secondary **Li/S battery** contg.

styrene-butadiene rubber and polytetrafluoroethylene as cathode binders)

IT Fluoropolymers, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(secondary **Li/S battery** contg.

styrene-butadiene rubber and polytetrafluoroethylene as cathode binders)

IT 9002-84-0, Polytetrafluoroethylene

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(binder additive; secondary **Li/S****battery** contg. styrene-butadiene rubber and polytetrafluoroethylene as cathode binders)IT **7704-34-9, Sulfur**, uses

RL: DEV (Device component use); USES (Uses)

(cathode active mass; secondary **Li/S**

battery contg. styrene-butadiene rubber and
polytetrafluoroethylene as cathode binders)
IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(cathode elec. conductor; secondary **Li/S**
battery contg. styrene-butadiene rubber and
polytetrafluoroethylene as cathode binders)
IT 9003-55-8
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, binder; secondary **Li/S**
battery contg. styrene-butadiene rubber and
polytetrafluoroethylene as cathode binders)

L54 ANSWER 4 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:361886 HCAPLUS
DOCUMENT NUMBER: 142:414509
TITLE: Organic electrolytic solution for lithium
battery
INVENTOR(S): Kim, Ju-Yup; Kim, Han-Soo; Park, Jin-Hwan; Lee,
Seok-Soo
PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1526600	A1	20050427	EP 2004-256478	200410 20
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
US 2005106471	A1	20050519	US 2004-968903	200410 21
CN 1610179	A	20050427	CN 2004-10095920	200410 22
JP 2005129540	A2	20050519	JP 2004-309983	200410 25
PRIORITY APPLN. INFO.:			KR 2003-74661	A

200310

24

OTHER SOURCE(S): MARPAT 142:414509

AB The present invention is related to an org. electrolytic soln. comprising a halogenated benzene compd., such as 1-iodobenzene or 1-chlorobenzene. Specifically, the halogenated benzene compd. has a high polarity and is capable of reducing the reactivity of the lithium metal surface. Due to these characteristics of the halogenated benzene compd., the lithium ions are unlikely to bond with the sulfide anions. Therefore, the soly. of the sulfide within the electrolyte is increased, thereby improving the charge/discharge efficiency characteristics of the lithium ions and the lifespan of batteries. Moreover, the org. electrolytic soln. of the present invention may be used in any battery type where an anode is composed of lithium metal, and in particular, **lithium sulfur batteries.**

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; org. electrolytic soln. for lithium battery)

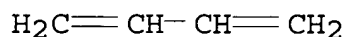
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

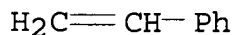
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M010-40

ICS H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; org. electrolytic soln. for lithium
battery)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L54 ANSWER 5 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:253918 HCAPLUS

DOCUMENT NUMBER: 142:319831

TITLE: Polymer film containing **cathode** and
lithium/sulfur battery
using the **cathode**

INVENTOR(S): Kim, Chu-Hwa; Liu, Young-Kyun; Cho, Ming-Dong

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005079096	A2	20050324	JP 2004-247052	200408 26
US 2005175903	A1	20050811	US 2004-924912	200408 25
US 7078124	B2	20060718		
CN 1591934	A	20050309	CN 2004-10085179	200408 27
PRIORITY APPLN. INFO.:			KR 2003-60197	A 200308 29

AB The cathode has an active mass layer contg. S and/or metal
(poly)sulfide on a conductive support, and a polymer contg. a nonaq.
electrolyte soln. forming a film on the active mass layer and filled
in the pores in the active mass layer.

IT 7704-34-9, Sulfur, uses

RL: DEV (Device component use); USES (Uses)

(**cathodes** having nonaq. electrolyte soln. contg.

polymer on surface and in pores of active mass layer for sodium/

sulfur batteries)

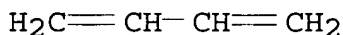
RN 7704-34-9 HCAPLUS
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-55-8
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; cathodes having nonaq. electrolyte
soln. contg. polymer on surface and in pores of active mass layer
for sodium/**sulfur batteries**)
RN 9003-55-8 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

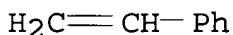
CM 1

CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8



IC ICM H01M004-02
ICS H01M004-38; H01M004-58; H01M004-62; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium sulfur battery cathode**
polymer electrolyte layer filling
IT Battery cathodes
(cathodes having nonaq. electrolyte soln. contg. polymer on
surface and in pores of active mass layer for sodium/
sulfur batteries)
IT Carbon black, uses
Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)

(cathodes having nonaq. electrolyte soln. contg. polymer on surface and in pores of active mass layer for sodium/sulfur batteries)

IT 109-87-5, Dimethoxymethane 111-96-6, Diglyme 646-06-0, Dioxolane 7429-90-5, Aluminum, uses 7704-34-9, Sulfur, uses 15625-89-5, Tmpta 17831-71-9D, Tetra(ethylene glycol)diacrylate, polymer 25721-76-0D, Poly(ethylene glycol)dimethacrylate, polymer 25852-47-5D, Poly(ethylene glycol)dimethacrylate, polymer 90076-65-6
RL: DEV (Device component use); USES (Uses)

(cathodes having nonaq. electrolyte soln. contg. polymer on surface and in pores of active mass layer for sodium/sulfur batteries)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; cathodes having nonaq. electrolyte soln. contg. polymer on surface and in pores of active mass layer for sodium/sulfur batteries)

L54 ANSWER 6 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:219961 HCAPLUS

DOCUMENT NUMBER: 142:282885

TITLE: Organic electrolytic solution for lithium-sulfur battery

INVENTOR(S): Ryu, Young-Gyoon; Cho, Myung-Dong; Lee, Sang-Mock; Trofimov, Boris A.

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 7 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2005053842	A1	20050310	US 2004-927188	20040827
JP 2005085761	A2	20050331	JP 2004-257357	20040903
CN 1610178	A	20050427	CN 2004-10068748	20040906

PRIORITY APPLN. INFO.: KR 2003-62171 A

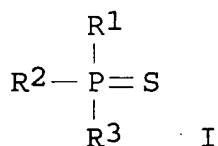
MEI HUANG EIC1700 REM4B28 571-272-3952

08/18/2006

200309

05

OTHER SOURCE(S): MARPAT 142:282885
GI



AB An org. electrolytic soln. for a **lithium-sulfur battery** that can improve discharge capacity and cycle life of the **battery**, and a **lithium-sulfur battery** using the org. electrolytic soln. are disclosed. The electrolytic soln. includes a lithium salt, an org. solvent, and further a phosphine sulfide-based compd. represented by formula (I), wherein R1, R2 and R3 are the same or different from each other, and each represents one selected from the group consisting of a substituted or unsubstituted C1-30 alkyl group, a substituted or unsubstituted C6-30 aryl group, a substituted or unsubstituted C1-30 alkoxy group and a substituted or unsubstituted C8-30 Ar-alkenyl group. The electrolytic soln. including the phosphine sulfide-based compd. represented by I can suppress prodn. of lithium sulfides so that a redn. in battery capacity can be prevented.

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; org. electrolytic soln. for
lithium-sulfur battery)

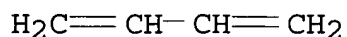
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

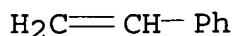
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-58
ICS H01M010-40; H01M004-62
INCL 429326000; 429340000; 429218100; 429329000; 429232000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium sulfur battery** org electrolyte
IT Esters, uses
RL: DEV (Device component use); USES (Uses)
(alkyl; org. electrolytic soln. for **lithium-sulfur battery**)
IT Nitriles, uses
RL: DEV (Device component use); USES (Uses)
(arom.; org. electrolytic soln. for **lithium-sulfur battery**)
IT Secondary batteries
(lithium; org. electrolytic soln. for **lithium-sulfur battery**)
IT Battery electrolytes
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Amides, uses
Lactones
Polyethers, uses
RL: DEV (Device component use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Carbon black, uses
RL: MOA (Modifier or additive use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Carbon fibers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)

(org. electrolytic soln. for **lithium-sulfur battery**)

IT 79-20-9, Methyl acetate 96-47-9, 2-Methyltetrahydrofuran
105-58-8, Diethyl carbonate 107-31-3, Methyl formate 109-99-9,
Thf, uses 110-71-4 463-79-6D, Carbonic acid, ester 554-12-1,
Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Methyl
ethyl carbonate 623-96-1, Dipropyl carbonate 646-06-0,
1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-Dioxolane 4319-13-5
7439-93-2, Lithium, uses 7440-44-0D, Carbon, polymers, with sulfur
7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, polymers, with carbon
7791-03-9, Lithium perchlorate 9002-88-4, Polyethylene
9003-07-0, Polypropylene 14283-07-9, Lithium tetrafluoroborate
21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium
hexafluoroarsenate 33454-82-9, Lithium triflate 56525-42-9,
Methyl propyl carbonate 74432-42-1, Lithium polysulfide
90076-65-6 132404-42-3 132843-44-8

RL: DEV (Device component use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)

IT 7782-42-5, Graphite, uses
RL: MOA (Modifier or additive use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)

IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; org. electrolytic soln. for
lithium-sulfur battery)

L54 ANSWER 7 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:219959 HCAPLUS

DOCUMENT NUMBER: 142:300973

TITLE: Organic electrolytic solution for
lithium-sulfur battery

INVENTOR(S): Ryu, Young-Gyoon; Cho, Myung-Dong; Lee,
Sang-Mock; Trofimov, Boris A.

PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2005053839	A1	20050310	US 2004-927182	

200408
27
JP 2005085760 A2 20050331 JP 2004-257356
200409
03
CN 1595712 A 20050316 CN 2004-10068750
200409
06
PRIORITY APPLN. INFO.: KR 2003-62172 A
200309
05

OTHER SOURCE(S): MARPAT 142:300973

AB An org. electrolytic soln. for a **lithium-sulfur battery** that provides high discharge capacity and longer cycle life to the **battery**, and a **lithium-sulfur battery** including the org. electrolytic soln. are provided. The electrolytic soln. includes a lithium salt, an org. solvent, and further a compd. represented by the formula $[R1CH(OR2)CH2]2Sx$ where R1 is selected from the group consisting of a H, a substituted or unsubstituted C1-30 alkyl group, a substituted or unsubstituted C1-30 alkoxy group, a substituted or unsubstituted C6-30 aryl group, and a substituted or unsubstituted C8-30 Ar alkenyl group; R2 represents a group of the formula $(R3O)R4(R5O)C$ or $R6R7R8Si$; wherein R3-R8 are independently a H atom, a C1-5 linear or branched alkoxy group; and x is an integer from 2-5.

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber; org. electrolytic soln. for **lithium-sulfur battery**)

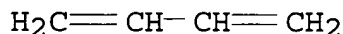
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8

$\text{H}_2\text{C}=\text{CH}-\text{Ph}$

IC ICM H01M004-58
ICS H01M004-60; H01M006-16
INCL 429231950; X42-918.8; X42-933.6; X42-933.7; X42-933.9; X42-934.0;
X42-934.1; X42-934.2
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium sulfur battery** org electrolyte
polysulfide
IT Esters, uses
RL: DEV (Device component use); USES (Uses)
(alkyl; org. electrolytic soln. for **lithium-sulfur battery**)
IT Nitriles, uses
RL: DEV (Device component use); USES (Uses)
(arom.; org. electrolytic soln. for **lithium-sulfur battery**)
IT Secondary batteries
(lithium; org. electrolytic soln. for **lithium-sulfur battery**)
IT Battery electrolytes
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Amides, uses
Lactones
Polyethers, uses
Polysulfides
RL: DEV (Device component use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Carbon black, uses
RL: MOA (Modifier or additive use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Carbon fibers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(org. electrolytic soln. for **lithium-sulfur battery**)
IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)

(org. electrolytic soln. for lithium-sulfur
battery)

IT 79-20-9, Methyl acetate 96-47-9, 2-Methyltetrahydrofuran 96-48-0
105-58-8, Diethyl carbonate 107-31-3, Methyl formate 109-99-9,
Thf, uses 110-71-4 463-79-6D, Carbonic acid, ester 554-12-1,
Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0,
Methylethylcarbonate 623-96-1, Dipropyl carbonate 646-06-0,
1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-Dioxolane 7429-90-5,
Aluminum, uses 7439-93-2, Lithium, uses 7704-34-9, Sulfur, uses
7704-34-9D, Sulfur, carbon compd., polymer 7704-34-9D, Sulfur,
compd. 7791-03-9, Lithium perchlorate 9002-88-4, Polyethylene
9003-07-0, Polypropylene 14283-07-9, Lithium tetrafluoroborate
21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium
hexafluoroarsenate 33454-82-9, Lithium triflate 56525-42-9,
Methylpropylcarbonate 74432-42-1, Lithium polysulfide 90076-65-6
132404-42-3 132843-44-8 847612-71-9

RL: DEV (Device component use); USES (Uses)

(org. electrolytic soln. for lithium-sulfur
battery)

IT 7782-42-5, Graphite, uses
RL: MOA (Modifier or additive use); USES (Uses)

(org. electrolytic soln. for lithium-sulfur
battery)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)

(styrene-butadiene rubber; org. electrolytic soln. for
lithium-sulfur battery)

L54 ANSWER 8 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:1019589 HCAPLUS

DOCUMENT NUMBER: 142:9218

TITLE: Cathodes for lithium secondary
batteries

INVENTOR(S): Kim, Jan-Dee; Kim, Seok; Choi, Su-Suk; Han,
Ji-Seong

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 11 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004234851	A1	20041125	US 2004-845192	

200405
14

KR 2004100259 A 20041202 KR 2003-32549

200305
22

CN 1574427 A 20050202 CN 2004-10071492

200405
22

JP 2004349263 A2 20041209 JP 2004-152981

200405
24

PRIORITY APPLN. INFO.:

KR 2003-32549

A

200305
22

AB The **cathode** of a Li secondary **battery** contains a
cathode active material, an elec. conductive material, a
binder, and a thickener - a nonionic cellulose-based compd.

IT **12136-58-2**, Lithium sulfide **725228-54-6D**,
sulfonated

RL: DEV (Device component use); USES (Uses)

(**cathode** material for lithium secondary **battery**
)

RN 12136-58-2 HCAPLUS

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

RN 725228-54-6 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene and ethene, triblock
(9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

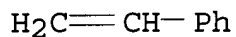
CMF C4 H6

 $\text{H}_2\text{C}=\text{CH}-\text{CH}=\text{CH}_2$

CM 2

CRN 100-42-5

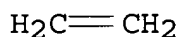
CMF C8 H8



CM 3

CRN 74-85-1

CMF C2 H4



IT 9003-18-3

RL: DEV (Device component use); USES (Uses)
(nitrile rubber; **cathode** material for lithium secondary
battery)

RN 9003-18-3 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

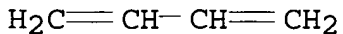
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; **cathode** material for lithium
secondary **battery**)

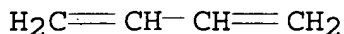
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

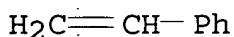
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-62

ICS H01M004-58; H01M004-60

INCL 429217000; 429218100; 429213000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **lithium battery cathode sulfur**

carbon binder thickener

IT **Battery cathodes**

(**cathode** material for lithium secondary **battery**)

IT Carbon black, uses

Fluoropolymers, uses

Nitrile rubber, uses

Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)

(**cathode** material for lithium secondary **battery**)

IT **Secondary batteries**

(lithium; **cathode** material for lithium secondary **battery**)

IT 9004-62-0, Hydroxyethyl cellulose 9004-64-2, Hydroxypropyl

cellulose 9004-65-3, Hydroxypropyl methyl cellulose 9004-67-5,

Methyl cellulose 9011-17-0 9062-14-0, Hydroxypropyl ethyl

cellulose 10544-50-0, **Sulfur** (S8), uses

12136-58-2, Lithium sulfide 24937-79-9, Polyvinylidene

fluoride 63143-57-7, Carbon sulfide **725228-54-6D**,

sulfonated

RL: DEV (Device component use); USES (Uses)
(**cathode** material for lithium secondary **battery**)

IT 9003-18-3

RL: DEV (Device component use); USES (Uses)
(nitrile rubber; **cathode** material for lithium secondary **battery**)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; **cathode** material for lithium secondary **battery**)

L54 ANSWER 9 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:943544 HCAPLUS

DOCUMENT NUMBER: 142:180346

TITLE: **Positive electrode for lithium-sulfur battery**

and preparation method thereof

INVENTOR(S): Cho, Ji Hun; Jang, Deok Rye; Jun, Sang Eun; Kim, Hui Tak; Kim, Seon Uk; Ko, Gi Seok; Kwon, Chang Wi

PATENT ASSIGNEE(S): Newturn Energy Co., Ltd., S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2003006745	A	20030123	KR 2001-42634	20010714
				20010714

PRIORITY APPLN. INFO.: KR 2001-42634

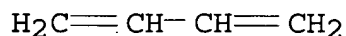
AB A composite pos. electrode compn. for a **lithium-sulfur** primary or secondary **battery**, a pos. electrode prepd. from the compn. and its prepn. method are provided, to increase the capacity by improving the utilization rate of sulfur active material and to improve the lifetime of a battery by enhancing the mech. properties of a pos. electrode. The composite **pos. electrode** compn. comprises a **sulfur** or organosulfur compd. which is such that sulfur elements can be

combined and sepd. during the repeated charging and discharging process; a conductive material selected from conductive carbon and conductive polymers; and a binder material comprising a **butadiene-based copolymer** and a polysaccharide-based polymer. Preferably the binder material comprises 1-10 parts by wt. of butadiene-styrene and 1-10 parts by wt. of CM-cellulose based on 100 parts by wt. of the electrode, and optionally comprises further a fluorine-based polymer.

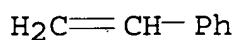
IT 7704-34-9D, Sulfur, compds.
RL: DEV (Device component use); USES (Uses)
(pos. electrode for lithium
sulfur battery and prepn. method thereof)
RN 7704-34-9 HCAPLUS
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-55-8, Styrene-butadiene
copolymer
RL: DEV (Device component use); POF (Polymer in formulation); USES
(Uses)
(pos. electrode for lithium
sulfur battery and prepn. method thereof)
RN 9003-55-8 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)
CM 1
CRN 106-99-0
CMF C4 H6



CM 2
CRN 100-42-5
CMF C8 H8



IC ICM H01M004-60
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **pos electrode lithium sulfur**
battery cathode organo **sulfur** rubber;
butadiene rubber polysaccharide fluoropolymer blend binder
conductive carbon electrode
IT Fluoropolymers, uses
Polysaccharides, uses
RL: DEV (Device component use); POF (Polymer in formulation); USES
(Uses)
(binder; **pos. electrode** for **lithium**
sulfur battery and prepn. method thereof)
IT Synthetic rubber, uses
RL: DEV (Device component use); POF (Polymer in formulation); USES
(Uses)
(butadiene copolymers, binder; **pos.**
electrode for **lithium sulfur**
battery and prepn. method thereof)
IT Secondary batteries
(lithium; **pos. electrode** for **lithium**
sulfur battery and prepn. method thereof)
IT Battery cathodes
Composites
Conducting polymers
(**pos. electrode** for **lithium**
sulfur battery and prepn. method thereof)
IT Organic compounds, uses
RL: DEV (Device component use); USES (Uses)
(**sulfur-contg.**; **pos. electrode** for
lithium sulfur battery and prepn.
method thereof)
IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(elec. conductive; **pos. electrode** for
lithium sulfur battery and prepn.
method thereof)
IT 7704-34-9D, Sulfur, compds.
RL: DEV (Device component use); USES (Uses)
(**pos. electrode** for **lithium**
sulfur battery and prepn. method thereof)
IT 9003-55-8, Styrene-butadiene
copolymer 9004-32-4
RL: DEV (Device component use); POF (Polymer in formulation); USES
(Uses)
(**pos. electrode** for **lithium**

sulfur battery and prepn. method thereof)

L54 ANSWER 10 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:430505 HCAPLUS

DOCUMENT NUMBER: 140:426098

TITLE: **Cathode for lithium-sulfur battery**

INVENTOR(S): Hwang, Duck-chul

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 18 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004101753	A1	20040527	US 2003-719614	20031121
KR 2004046139	A	20040605	KR 2002-73961	20021126
KR 2004067030	A	20040730	KR 2003-3978	20030121
JP 2004179160	A2	20040624	JP 2003-386584	20031117
CN 1503385	A	20040609	CN 2003-10117953	20031126
PRIORITY APPLN. INFO.:			KR 2002-73961	A 20021126
			KR 2003-3978	A 20030121

AB Disclosed is a **pos. electrode** for a **lithium-sulfur battery** including a pos. active material selected from elemental sulfur (S8), a sulfur-based compd. and mixts. thereof; a conductive material; a binder; and an inorg. additive with a particle size (v, 50%) of 5000 nm or less and

having insoly. to an electrolyte.

IT 7704-34-9, Sulfur, uses 7704-34-9D,
Sulfur, compd.
RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur
battery)
RN 7704-34-9 HCAPLUS
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

RN 7704-34-9 HCAPLUS
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

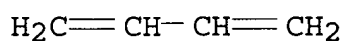
S

IT 9003-18-3
RL: TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, coating; cathode for lithium
-sulfur battery)
RN 9003-18-3 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)
CM 1
CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 106-99-0
CMF C4 H6



IT 106107-54-4 694491-73-1

RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, hydrogenated, block, triblock,
sulfonated, coating; cathode for lithium-
sulfur battery)

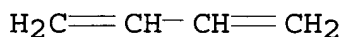
RN 106107-54-4 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, block (9CI) (CA
INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



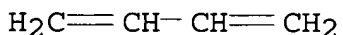
RN 694491-73-1 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA
INDEX NAME)

CM 1

CRN 106-99-0

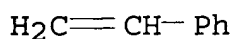
CMF C4 H6



CM 2

CRN 100-42-5

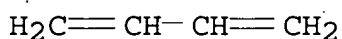
CMF C8 H8



IT 694491-73-1D, hydrogenated, block, triblock
RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, sulfonated, coating; **cathode**
for **lithium-sulfur battery**)
RN 694491-73-1 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA
INDEX NAME)

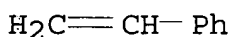
CM 1

CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8



IC ICM H01M004-58
ICS H01M002-16; H01M004-62
INCL 429218100; 429217000; 429137000; 429231950; 429232000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **cathode lithium sulfur battery**
IT Battery **cathodes**
Ionic conductivity
Surface roughness
(**cathode for lithium-sulfur**
battery)
IT Oxides (inorganic), uses
Sulfides, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**cathode for lithium-sulfur**
battery)
IT Fluoropolymers, uses

- RL: TEM (Technical or engineered material use); USES (Uses)
(cathode for lithium-sulfur battery)
- IT Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(cathode for lithium-sulfur battery)
- IT Fluoropolymers, uses
Nitrile rubber, uses
Polyolefins
Polyoxyalkylenes, uses
Polyurethanes, uses
Polyvinyl butyrals
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; cathode for lithium-sulfur battery)
- IT Styrene-butadiene rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrogenated, block, triblock, sulfonated, coating; cathode for lithium-sulfur battery)
- IT Secondary batteries
(lithium; cathode for lithium-sulfur battery)
- IT 7429-90-5, Aluminum, uses 7440-44-0D, Carbon, sulfur compd., polymer 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, carbon compd., polymer 7704-34-9D, Sulfur, compd. 74432-42-1, Lithium polysulfide 90076-65-6
RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur battery)
- IT 1314-23-4, Zirconium oxide, uses 1314-62-1, Vanadium oxide (V2O5), uses 1344-28-1, Aluminum oxide, uses 11099-11-9, Vanadium oxide 12039-13-3, Titanium sulfide (TiS2) 13463-67-7, Titanium oxide, uses
RL: MOA (Modifier or additive use); USES (Uses)
(cathode for lithium-sulfur battery)
- IT 1317-37-9, Iron sulfide FeS 1332-29-2, Tin oxide 7440-44-0, Carbon, uses 9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether 9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl chloride copolymer 9003-39-8, Polyvinylpyrrolidone 9004-35-7, Cellulose acetate 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12022-71-8, Iron titanium oxide FeTiO3 12047-27-7, Barium titanium oxide BaTiO3, uses 24937-79-9, PvdF

25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl
acetate-1-vinyl-2-pyrrolidone copolymer 25322-68-3, Peo
49717-87-5, 2-Propenoic acid, ion(1-) homopolymer, uses
49717-97-7, 2-Propenoic acid, 2-methyl-, ion(1-) homopolymer, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; **cathode for lithium-sulfur
battery**)

IT 7631-86-9, Colloidal silica, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(colloidal, coating; **cathode for lithium-
sulfur battery**)

IT 9003-18-3
RL: TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, coating; **cathode for lithium-
sulfur battery**)

IT 106107-54-4 694491-73-1
RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, hydrogenated, block, triblock,
sulfonated, coating; **cathode for lithium-
sulfur battery**)

IT 694491-73-1D, hydrogenated, block, triblock
RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, sulfonated, coating; **cathode
for lithium-sulfur battery**)

L54 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:392153 HCAPLUS

DOCUMENT NUMBER: 140:378108

TITLE: **Cathode for lithium
sulfur battery**

INVENTOR(S): Hwang, Duck-chul

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

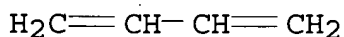
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004091776	A1	20040513	US 2003-693925	200310 28
KR 2004037322	A	20040507	KR 2002-65775	200210.

JP 2004152743 A2 20040527 JP 2003-274979 28
CN 1499659 A 20040526 CN 2003-10115679 200307
200310
28
PRIORITY APPLN. INFO.: KR 2002-65775 A 200210
28

AB A pos. electrode for a lithium
sulfur battery and a lithium
sulfur battery include a pos. active material with
a particle size (v, 50%) of 10 µm or less, or has an av. surface
roughness of 5 µm. The pos. active material is selected from
elemental sulfur, a sulfur-based compd.; and a mixt. thereof.
IT 9003-56-9
RL: TEM (Technical or engineered material use); USES (Uses)
(abs rubber, coatings; cathode for
lithium sulfur battery)
RN 9003-56-9 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)
CM 1
CRN 107-13-1
CMF C3 H3 N

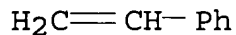


CM 2
CRN 106-99-0
CMF C4 H6



CM 3

CRN 100-42-5
CMF C8 H8



IT 9003-18-3

RL: TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, coatings; **cathode for lithium sulfur battery**)

RN 9003-18-3 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

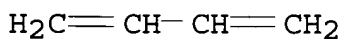
CM 1

CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 106-99-0
CMF C4 H6



IT 9003-55-8

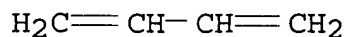
RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, coatings; **cathode for lithium sulfur battery**)

RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

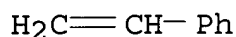
CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-58

ICS B05D003-02; H01M002-16

INCL 429218100; 429137000; 427372200

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38ST **cathode lithium sulfur battery**

IT Synthetic rubber, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(butene-ethylene-styrene, block, triblock, sulfonated, coatings;
**cathode for lithium sulfur
battery**)IT Battery **cathodes**Coating materials
(**cathode for lithium sulfur
battery**)

IT Fluoropolymers, uses

Polyoxyalkylenes, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(**cathode for lithium sulfur
battery**)IT **ABS** rubber

Fluoropolymers, uses

Nitrile rubber, uses

Polymers, uses

Polyolefins

Polyoxyalkylenes, uses

Polyurethanes, uses

Polyvinyl butyrals

Styrene-butadiene rubber, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; **cathode for lithium sulfur
battery**)

IT Materials

- (inorg., coatings; **cathode for lithium sulfur battery**)
- IT Secondary batteries
(**lithium; cathode for lithium sulfur battery**)
- IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(**cathode for lithium sulfur battery**)
- IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(C-coated; **cathode for lithium sulfur battery**)
- IT 9003-56-9
RL: TEM (Technical or engineered material use); USES (Uses)
(**abs rubber, coatings; cathode for lithium sulfur battery**)
- IT 7439-93-2, Lithium, uses 7440-44-0D, Carbon, **sulfur** compd., polymer 7704-34-9D, **Sulfur**, carbon compd., polymer 10544-50-0, **Sulfur** s8, uses 74432-42-1, Lithium polysulfide
RL: DEV (Device component use); USES (Uses)
(**cathode for lithium sulfur battery**)
- IT 1314-23-4, Zirconium oxide, uses 1332-29-2, Tin oxide 1332-37-2, Iron oxide, uses 7440-44-0, Carbon, uses 9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether 9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl chloride copolymer 9003-39-8, Polyvinyl pyrrolidone 9004-35-7, Cellulose acetate 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 11099-11-9, Vanadium oxide 11126-12-8, Iron sulfide 12047-27-7, Barium titanate, uses 12789-64-9, Iron titanate 13463-67-7, Titanium oxide, uses 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate/vinylpyrrolidone copolymer 25322-68-3, Peo 49717-87-5, 2-Propenoic acid, ion(1-) homopolymer, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; **cathode for lithium sulfur battery**)
- IT 1344-28-1, Alumina, uses 7631-86-9, Colloidal silica, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(colloidal, coatings; **cathode for lithium sulfur battery**)
- IT 9003-18-3
RL: TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, coatings; **cathode for lithium**

sulfur battery)

IT 9003-55-8

RL: TEM (Technical or engineered material use); USES (Uses)
 (styrene-butadiene rubber, coatings; cathode for
 lithium sulfur battery)

L54 ANSWER 12 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:203426 HCAPLUS

DOCUMENT NUMBER: 140:238424

TITLE: Positive electrode for
 lithium-sulfur battery
 and lithium-sulfur
 battery and article of manufacture
 including same

INVENTOR(S): Jung, Yongju; Kim, Seok; Choi, Yunsuk

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004048154	A1	20040311	US 2003-370772	20030224
EP 1443585	A2	20040804	EP 2003-4207	20030225
EP 1443585	A3	20040811		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004103548	A2	20040402	JP 2003-62292	20030307
CN 1482693	A	20040317	CN 2003-120576	20030314
PRIORITY APPLN. INFO.:			KR 2002-54951	20020911

AB A pos. electrode for a lithium-

sulfur battery and a lithium-sulfur battery including the same have a pos. electrode that includes a pos. active material, a conductor, an org. binder, and an additive. The pos. active material includes at least one selected from elemental sulfur, a sulfur-based compd., or a mixt. thereof. The additive includes a polymer having at least one amino nitrogen group in main chains or side chains.

IT 7704-34-9, Sulfur, uses 12136-58-2,
Lithium sulfide
RL: DEV (Device component use); USES (Uses)
(pos. electrode for lithium-sulfur battery and lithium-sulfur battery and article of manuf. including same)
RN 7704-34-9 HCAPLUS
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

RN 12136-58-2 HCAPLUS
CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

IT 9003-17-2, Polybutadiene
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(pos. electrode for lithium-sulfur battery and lithium-sulfur battery and article of manuf. including same)
RN 9003-17-2 HCAPLUS
CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0
CMF C4 H6

H₂C=CH-CH=CH₂

IC ICM H01M004-58
ICS H01M004-62
INCL 429212000; 429218100; 429217000; 429231950
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **pos electrode lithium sulfur**
battery article manuf including same
IT Secondary **batteries**
(lithium; **pos. electrode** for lithium
-sulfur **battery** and lithium-
sulfur **battery** and article of manuf. including
same)
IT **Battery electrodes**
Binders
Secondary **batteries**
(**pos. electrode** for lithium-
sulfur **battery** and lithium-
sulfur **battery** and article of manuf. including
same)
IT Fluoropolymers, uses
Polyamides, uses
Polyesters, uses
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(**pos. electrode** for lithium-
sulfur **battery** and lithium-
sulfur **battery** and article of manuf. including
same)
IT 7439-93-2, Lithium, uses **7704-34-9, Sulfur**, uses
9011-14-7, Poly(methyl methacrylate 9011-17-0,
Hexafluoropropylene-vinylidene fluoride copolymer **12136-58-2**
, Lithium sulfide 24937-79-9, Polyvinylidene fluoride
RL: DEV (Device component use); USES (Uses)
(**pos. electrode** for lithium-
sulfur **battery** and lithium-
sulfur **battery** and article of manuf. including
same)
IT 110-71-4 111-96-6, Diglyme 646-06-0, Dioxolane 9002-84-0,
Polytetrafluoroethylene 9002-86-2, Polyvinyl chloride 9003-01-4,
Polyacrylic acid **9003-17-2**, Polybutadiene 9003-31-0,
Polyisoprene 9003-32-1, Polyethyl acrylate 9003-39-8, Polyvinyl
pyrrolidone 25014-41-9, Polyacrylonitrile 25038-54-4,
Polycaprolactam, uses 25038-59-9, Polyethylene terephthalate, uses
26913-06-4, Poly[imino(1,2-ethanediyl)] 90076-65-6
RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)
(**pos. electrode** for lithium-

sulfur battery and lithium-sulfur battery and article of manuf. including same)

L54 ANSWER 13 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:119840 HCAPLUS
 DOCUMENT NUMBER: 140:149223
 TITLE: Method for producing **cathode** for **lithium-sulfur battery**
 INVENTOR(S): Hwang, Duck-chul; Park, Zin; Lee, Jae-woan
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 11 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004029014	A1	20040212	US 2003-634748	20030806
KR 2004013585	A	20040214	KR 2002-46581	20020807
JP 2004071566	A2	20040304	JP 2003-283959	20030731
CN 1495937	A	20040512	CN 2003-127272	20030807
PRIORITY APPLN. INFO.:			KR 2002-46581	A 20020807

AB The invention concerns a **pos. electrode** of a **lithium-sulfur battery**, a method of producing the same, and a **lithium-sulfur battery** include, as the pos. electrode, a current collector, a pos. active material layer on the current collector, and a polymer layer on the pos. active material on the current collector.

IT 9003-56-9
 RL: DEV (Device component use); USES (Uses)
 (ABS rubber, method for producing **cathode** for **lithium-sulfur battery**)

RN 9003-56-9 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)

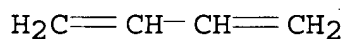
CM 1

CRN 107-13-1
CMF C3 H3 N



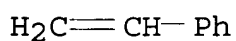
CM 2

CRN 106-99-0
CMF C4 H6



CM 3

CRN 100-42-5
CMF C8 H8



IT 9003-18-3
RL: DEV (Device component use); USES (Uses)
(nitrile rubber, method for producing **cathode** for
lithium-sulfur battery)

RN 9003-18-3 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

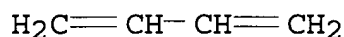
CRN 107-13-1
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 106107-54-4

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, hydrogenated, block, triblock,
sulfonated; method for producing **cathode** for
lithium-sulfur battery)

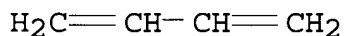
RN 106107-54-4 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, block (9CI) (CA
INDEX NAME)

CM 1

CRN 106-99-0

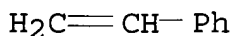
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, method for producing **cathode**
for **lithium-sulfur battery**)

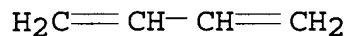
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

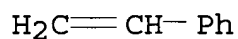
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IT 694491-73-1D, hydrogenated, block, triblock

RL: DEV (Device component use); USES (Uses)

(styrene-butadiene rubber, sulfonated; method for producing
cathode for lithium-sulfur
battery)

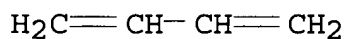
RN 694491-73-1 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA
INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8

H₂C=CH-Ph

IC ICM H01M002-16
ICS H01M004-60; H01M004-58
INCL 429246000; 429251000; 429252000; 429218100; 429213000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **cathode lithium sulfur battery**
IT Polyurethanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(acrylates, ethoxylated; method for producing **cathode**
for **lithium-sulfur battery**)
IT Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(hydrogenated, block; triblock, sulfonated; method for producing
cathode for lithium-sulfur
battery)
IT Primary batteries
(lithium; method for producing **cathode for**
lithium-sulfur battery)
IT Battery cathodes
(method for producing **cathode for lithium-**
sulfur battery)
IT **ABS** rubber
Fluoropolymers, uses
Nitrile rubber, uses
Polyolefins
Polyoxyalkylenes, uses
Polyvinyl butyrals
Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(method for producing **cathode for lithium-**
sulfur battery)
IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(method for producing **cathode for lithium-**
sulfur battery)
IT 9003-56-9
RL: DEV (Device component use); USES (Uses)
(**ABS** rubber, method for producing **cathode for**
lithium-sulfur battery)
IT 1344-28-1, Alumina, uses 7631-86-9, Colloidal silica, uses
RL: DEV (Device component use); USES (Uses)
(colloidal; method for producing **cathode for**
lithium-sulfur battery)

- IT 10344-93-1D, Acrylate, alkyl deriv.
RL: TEM (Technical or engineered material use); USES (Uses)
(ethoxylated; method for producing **cathode** for
lithium-sulfur battery)
- IT 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane 646-06-0,
1,3-Dioxolane 1314-23-4, Zirconium oxide, uses 1332-29-2, Tin
oxide 1332-37-2, Iron oxide, uses 7439-93-2, Lithium, uses
7440-44-0, Carbon, uses 7704-34-9, Sulfur, uses 7704-34-9D,
Sulfur, org. compd. 7791-03-9, Lithium perchlorate 9002-89-5,
Polyvinyl alcohol 9003-19-4, Polyvinyl ether 9003-20-7,
Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl chloride
copolymer 9003-39-8, Polyvinylpyrrolidone 9004-35-7, Cellulose
acetate 9010-88-2, Ethyl acrylate-methylmethacrylate copolymer
9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
11075-35-7, Vanadium titanium oxide 11099-11-9, Vanadium oxide
11126-12-8, Iron sulfide 12673-92-6, Titanium sulfide
12789-64-9, Iron titanate 13463-67-7, Titanium oxide, uses
14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium
hexafluorophosphate 24937-79-9, PVDF 25014-41-9,
Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone
copolymer 25322-68-3, Peo 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium triflate 49717-87-5, 2-Propenoic acid, ion(1-)
homopolymer, uses 49717-97-7, 2-Propenoic acid, 2-methyl-, ion(1-)
homopolymer, uses 69822-67-9, Poly(carbon sulfide) 90076-65-6,
Lithium bis(trifluoromethylsulfonyl)imide
RL: DEV (Device component use); USES (Uses)
(method for producing **cathode** for **lithium-**
sulfur battery)
- IT 7439-95-4, Magnesium, uses 7440-21-3, Silicon, uses 7440-24-6,
Strontium, uses 7440-28-0, Thallium, uses 7440-36-0, Antimony,
uses 7440-38-2, Arsenic, uses 7440-56-4, Germanium, uses
7440-69-9, Bismuth, uses 7440-70-2, Calcium, uses 7440-74-6,
Indium, uses 7553-56-2, Iodine, uses 7726-95-6, Bromine, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(method for producing **cathode** for **lithium-**
sulfur battery)
- IT 9003-18-3
RL: DEV (Device component use); USES (Uses)
(nitrile rubber, method for producing **cathode** for
lithium-sulfur battery)
- IT 64401-02-1 84170-28-5
RL: TEM (Technical or engineered material use); USES (Uses)
(protective coating contg.; method for producing **cathode**
for **lithium-sulfur battery**)
- IT 7429-90-5, Aluminum, uses 7440-39-3, Barium, uses 7440-42-8,
Boron, uses 7723-14-0, Phosphorus, uses 7727-37-9, Nitrogen,
uses 7782-41-4, Fluorine, uses 7782-44-7, Oxygen, uses

7782-50-5, Chlorine, uses 26570-48-9, Polyethylene glycol diacrylate 52496-08-9, Polypropylene glycol diacrylate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (protective coating; method for producing **cathode** for
lithium-sulfur battery)

IT 106107-54-4

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, hydrogenated, block, triblock,
 sulfonated; method for producing **cathode** for
lithium-sulfur battery)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, method for producing **cathode**
 for **lithium-sulfur battery**)

IT 694491-73-1D, hydrogenated, block, triblock

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber, sulfonated; method for producing
cathode for **lithium-sulfur**
battery)

L54 ANSWER 14 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:39669 HCAPLUS

DOCUMENT NUMBER: 140:79839

TITLE: Binder for **cathode** composition of
lithium-sulfur battery

INVENTOR(S): Kim, Seok; Jung, Yongju; Kim, Jan-Dee; Han,
 Ji-Seong

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004009397	A1	20040115	US 2003-431367	200305 08
KR 2004005438	A	20040116	KR 2002-40005	200207 10
CN 1467258	A	20040114	CN 2003-131475	200305 15

JP 2004047460

A2

20040212

JP 2003-154868

200305

30

PRIORITY APPLN. INFO.:

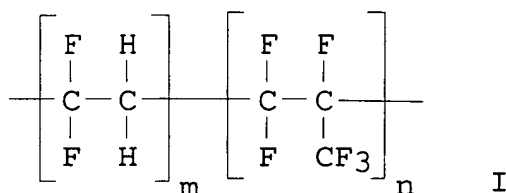
KR 2002-40005

A

200207

10

GI



AB A binder for a **lithium-sulfur battery** utilizes a fluorine-included polymer. The F-included polymer is represented by formula (I), where m is 0.5-1 and n is 0-0.5.

IT 9003-56-9

RL: MOA (Modifier or additive use); USES (Uses)

(abs rubber, binder for **cathode** compn. of **lithium-sulfur battery**)

RN 9003-56-9 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

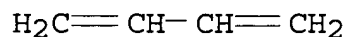
CMF C3 H3 N



CM 2

CRN 106-99-0

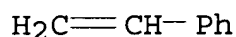
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



IT 108146-73-2

RL: MOA (Modifier or additive use); USES (Uses)

(binder for **cathode** compn. of **lithium-sulfur battery**)

RN 108146-73-2 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene, block (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

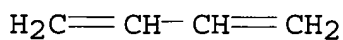
CMF C3 H3 N



CM 2

CRN 106-99-0

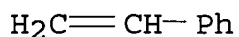
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



IT 9003-18-3

RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, binder for **cathode** compn. of
lithium-sulfur battery)

RN 9003-18-3 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

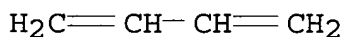
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder for **cathode** compn. of
lithium-sulfur battery)

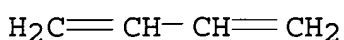
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8

 $\text{H}_2\text{C}=\text{CH}-\text{Ph}$

IC ICM H01M004-62

ICS C08F014-18; C08F114-18

INCL 429217000; 526242000; 526250000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38ST **cathode compn binder lithium sulfur
battery**IT Battery cathodes
Binders(binder for **cathode compn. of lithium-
sulfur battery**)IT **ABS** rubber

Fluoropolymers, uses

Nitrile rubber, uses

Styrene-butadiene rubber, uses

RL: MOA (Modifier or additive use); USES (Uses)

(binder for **cathode compn. of lithium-
sulfur battery**)

IT Secondary batteries

(lithium; binder for **cathode compn. of lithium
-sulfur battery**)

IT Polyoxyalkylenes, uses

RL: MOA (Modifier or additive use); USES (Uses)

(viscosity control agent; binder for **cathode compn. of
lithium-sulfur battery**)

IT 7429-90-5, Aluminum, uses

RL: DEV (Device component use); USES (Uses)

(C-coated; binder for **cathode compn. of lithium
-sulfur battery**)IT **9003-56-9**

RL: MOA (Modifier or additive use); USES (Uses)

(abs rubber, binder for **cathode compn. of
lithium-sulfur battery**)

IT 7704-34-9, Sulfur, uses

RL: DEV (Device component use); USES (Uses)

(binder for **cathode compn. of lithium-
sulfur battery**)

IT 9002-83-9, Ethene, chlorotrifluoro-homopolymer 9011-17-0,

1,1-Difluoroethylene-hexafluoropropylene copolymer 24981-14-4,
Ethene, fluoro-homopolymer 25038-71-5, Ethylene-
tetrafluoroethylene copolymer 25067-11-2, Tetrafluoroethylene-
hexafluoropropylene copolymer 25101-39-7, Ethylene,
chlorotrifluoro-, polymer with propene 25101-45-5,
Ethylene-trifluorochloroethylene copolymer 25120-58-5,
Fluoroethylene-hexafluoropropylene copolymer 25684-78-0,
1,1-Difluoroethylene-ethylene copolymer 25791-89-3 26008-14-0,
Ethylene-fluoroethylene copolymer 26794-60-5, Fluoroethylene-
propylene copolymer 27029-05-6, Propylene-tetrafluoroethylene
copolymer 30871-57-9, 1,1-Difluoroethylene-propylene copolymer
51772-72-6, Ethylene, chlorotrifluoro--hexafluoropropylene copolymer
108146-73-2 156395-51-6 640266-36-0 640266-37-1

RL: MOA (Modifier or additive use); USES (Uses)

(binder for **cathode** compn. of **lithium-
sulfur battery**)

IT 9003-18-3

RL: MOA (Modifier or additive use); USES (Uses)

(nitrile rubber, binder for **cathode** compn. of
lithium-sulfur battery)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)

(styrene-butadiene rubber, binder for **cathode** compn. of
lithium-sulfur battery)

IT 9002-89-5, Polyvinyl alcohol 9002-98-6 9003-01-4, Polyacrylic
acid 9003-05-8, Polyacrylamide 9003-39-8, Polyvinylpyrrolidone
9004-32-4, Carboxymethyl cellulose sodium salt 9004-62-0,
Hydroxyethyl cellulose 9004-65-3, Hydroxypropyl Methyl cellulose
9004-67-5, Methyl cellulose 25322-68-3, Peo

RL: MOA (Modifier or additive use); USES (Uses)

(viscosity control agent; binder for **cathode** compn. of
lithium-sulfur battery)

L54 ANSWER 15 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:590669 HCAPLUS

DOCUMENT NUMBER: 139:120003

TITLE: **Cathode for lithium-
sulfur battery of high energy
density**

INVENTOR(S): Han, Ji-Seong; Choi, Su-Suk; Park, Seung-Hee;
Choi, Yun-Suk

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003143462	A1	20030731	US 2002-310822	20021206
KR 2003063060	A	20030728	KR 2002-3625	20020122
CN 1434525	A	20030806	CN 2002-158421	20021224
JP 2003223897	A2	20030808	JP 2003-9505	20030117
			KR 2002-3625	20020122

PRIORITY APPLN. INFO.:

AB A pos. electrode for a lithium-sulfur battery includes a pos. active material including a sulfur-based compd., an elec. conductive material, an agent for increasing viscosity, and a binder. The agent is selected from a cellulose-based compd., an ionically conductive polymer, and a mixt. thereof. The binder includes styrene-butadiene rubber.

IT 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, compd.

RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur battery of high energy d.)

RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, **cathode** for **lithium**
-sulfur battery of high energy d.)

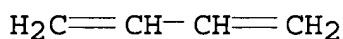
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

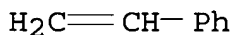
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-38

ICS H01M004-62

INCL 429218100; 429217000; 429232000; 429231900

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **lithium sulfur battery cathode**

IT Synthetic rubber, uses

RL: MOA (Modifier or additive use); USES (Uses)
(butadiene-ethylene-styrene; **cathode** for
lithium-sulfur battery of high energy
d.)

IT Synthetic rubber, uses

RL: MOA (Modifier or additive use); USES (Uses)
(butene-ethylene-styrene; **cathode** for **lithium**
-sulfur battery of high energy d.)

IT Battery **cathodes**

Conducting polymers
(**cathode** for **lithium-sulfur**
battery of high energy d.)

IT Polyoxyalkylenes, uses

Styrene-butadiene rubber, uses

RL: MOA (Modifier or additive use); USES (Uses)

- (cathode for lithium-sulfur battery of high energy d.)
- IT Primary batteries
(lithium; cathode for lithium-sulfur battery of high energy d.)
- IT Carbon black, uses
Metals, uses
RL: MOA (Modifier or additive use); USES (Uses)
(powder; cathode for lithium-sulfur battery of high energy d.)
- IT 7440-44-0, Activated carbon, uses
RL: MOA (Modifier or additive use); USES (Uses)
(activated, powder; cathode for lithium-sulfur battery of high energy d.)
- IT 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses
7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, compd.
RL: DEV (Device component use); USES (Uses)
(cathode for lithium-sulfur battery of high energy d.)
- IT 9000-11-7D, Cellulose, carboxymethyl ether, alkali metal salt
9003-05-8, Polyacrylamide 9003-20-7, Polyvinylacetate 9003-39-8,
Polyvinylpyrrolidone 9004-32-4, Cellulose, carboxymethyl ether,
sodium salt 9004-34-6D, Cellulose, compd. 9004-64-2D,
Hydroxypropylcellulose, alkali metal salt 9004-67-5D,
Methylcellulose, alkali metal salt 9078-35-7, Methylcellulose,
sodium salt 9086-60-6, Cellulose, carboxymethyl ether, ammonium
salt 25322-68-3, Peo 26590-05-6, Acrylamide-
diallyldimethylammonium chloride copolymer 54848-04-3, Cellulose,
carboxymethyl ether, potassium salt 55962-76-0, Cellulose,
carboxymethyl ether, lithium salt 104921-80-4,
Hydroxypropylcellulose, sodium salt 564455-79-4, Hydroxypropyl
methyl cellulose, ammonium salt 564455-80-7, Hydroxypropyl
cellulose, lithium salt 564455-81-8, Hydroxypropyl cellulose,
potassium salt 564455-82-9 564455-83-0, Methyl cellulose,
potassium salt 564455-84-1, Methyl cellulose, ammonium salt
RL: MOA (Modifier or additive use); USES (Uses)
(cathode for lithium-sulfur battery of high energy d.)
- IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, cathode for lithium-sulfur battery of high energy d.)

L54 ANSWER 16 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:547230 HCAPLUS
DOCUMENT NUMBER: 139:247972

TITLE: Rechargeable **lithium sulfur battery**. I. Structural change of **sulfur cathode** during discharge and charge

AUTHOR(S): Cheon, Sang-Eun; Ko, Ki-Seok; Cho, Ji-Hoon; Kim, Sun-Wook; Chin, Eog-Yong; Kim, Hee-Tak

CORPORATE SOURCE: New Turn Energy Company Limited, Suwon, 442-380, S. Korea

SOURCE: Journal of the Electrochemical Society (2003), 150(6), A796-A799
CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The structural change of the **sulfur cathode** during the electrochem. reaction of a **lithium sulfur battery** employing 0.5M LiCF₃SO₃-tetra(ethylene glycol) di-Me ether (TEGDME) was studied by SEM, XRD, and wave dispersive spectroscopy (WDS). The discharge process of the **lithium sulfur** cell could be divided into the 1st discharge region (2.4-2.1 V) where the redn. of elemental sulfur to form sol. polysulfides and further redn. of the sol. polysulfide occur, and the 2nd discharge region (2.1-1.5 V) where the sol. polysulfides are reduced to form a nonuniform Li₂S solid film covered over the carbon matrix. Also the charge of **lithium sulfur** cell leads to the conversion from Li₂S to the sol. polysulfide, resulting in the removal of Li₂S layer formed on carbon matrix. However, the oxidn. of the sol. polysulfide to solid sulfur hardly occurs and little Li₂S is left on carbon matrix even at 100% depth of charge.

IT 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(composite **cathode** with super P and poly(butadiene-co-styrene); structural change of **sulfur cathode** during discharge and charge of rechargeable **lithium sulfur battery**)

RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

S

IT 12136-58-2, Lithium sulfide (Li₂S)
RL: FMU (Formation, unclassified); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)
(structural change of **sulfur cathode** during

discharge and charge of rechargeable **lithium sulfur battery**

RN 12136-58-2 HCAPLUS

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)

(**styrene-butadiene** rubber, **polymers**

, binder for composite **cathode** of **sulfur** and

super P; structural change of **sulfur cathode**

during discharge and charge of rechargeable **lithium**

sulfur battery)

RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6

H₂C=CH-CH=CH₂

CM 2

CRN 100-42-5

CMF C8 H8

H₂C=CH-Ph

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST rechargeable **lithium sulfur battery**

cathode discharge charge soluble polysulfide; SEM XRD WDS

battery cathode structure change

IT **Styrene-butadiene** rubber, uses

RL: DEV (Device component use); USES (Uses)

(**polymers**, binder for composite **cathode** of

sulfur and super P; structural change of **sulfur**

- cathode during discharge and charge of rechargeable lithium sulfur battery)
- IT Battery cathodes
Electric potential
Secondary batteries
(structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)
- IT 7440-44-0, Super P, uses
RL: DEV (Device component use); USES (Uses)
(activated, composite cathode with sulfur and poly(butadiene-co-styrene); structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)
- IT 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(composite cathode with super P and poly(butadiene-co-styrene); structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)
- IT 143-24-8, Tetra(ethylene glycol) di methyl ether 33454-82-9
RL: DEV (Device component use); USES (Uses)
(electrolyte; structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)
- IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(foil, anode; structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)
- IT 9003-07-0, Celgard 3501
RL: DEV (Device component use); USES (Uses)
(separator; structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)
- IT 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)
- IT 9080-49-3, Sulfide ((Sx)2-)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(structural change of sulfur cathode during discharge and charge of rechargeable lithium sulfur battery)
- IT 12136-58-2, Lithium sulfide (Li₂S)
RL: FMU (Formation, unclassified); PRP (Properties); RCT (Reactant);

FORM (Formation, nonpreparative); RACT (Reactant or reagent)
(structural change of **sulfur cathode** during
discharge and charge of rechargeable **lithium
sulfur battery**)

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
(**styrene-butadiene** rubber, **polymers**
, binder for composite **cathode** of **sulfur** and
super P; structural change of **sulfur cathode**
during discharge and charge of rechargeable **lithium
sulfur battery**)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L54 ANSWER 17 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:473082 HCAPLUS

DOCUMENT NUMBER: 139:24151

TITLE: Preparation of **cathode** for
lithium sulfur battery

INVENTOR(S): Choi, Jae-Young; Yoo, Duck-Young; Lee, Jong-Ki;
Kim, Min-Seuk

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
US 2003113627	A1	20030619	US 2002-259293	200209 30
US 6908706	B2	20050621		
KR 2003050475	A	20030625	KR 2001-80906	200112 18
CN 1427491	A	20030702	CN 2002-144424	200209 27
JP 2003208894	A2	20030725	JP 2002-366929	200212 18
JP 3677267	B2	20050727		

PRIORITY APPLN. INFO.:

KR 2001-80906

A

200112

18

AB Provided is a cathode including a current collector, and a cathode active material layer laminated on the current collector, a method of making the cathode, and a battery including the cathode. The cathode active material includes particles having a core-shell structure with a sulfur-contg. active material core, a conductor coating disposed on a surface of the active material core, and a binder coating disposed on the conductor coating. A high-performance **lithium sulfur battery** can be manufd. using the cathode, since sufficient bondability can be attained with only a small amt. of a binder.

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)

(styrene-butadiene rubber, binder coating; prepn. of
**cathode for lithium sulfur
battery**)

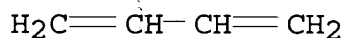
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

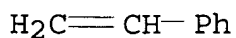
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-58

ICS H01M004-62

INCL 429218100; 429232000; 429217000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **cathode prepn lithium sulfur
battery**

- IT Fluoropolymers, uses
Polyoxyalkylenes, uses
Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(binder coating; prepn. of **cathode for lithium sulfur battery**)
- IT Battery cathodes
Coating materials
(prepn. of **cathode for lithium sulfur battery**)
- IT Polysulfides
RL: DEV (Device component use); USES (Uses)
(prepn. of **cathode for lithium sulfur battery**)
- IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
24937-79-9, Polyvinylidene fluoride 25322-68-3, Peo
RL: MOA (Modifier or additive use); USES (Uses)
(binder coating; prepn. of **cathode for lithium sulfur battery**)
- IT 7440-44-0, Carbon, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; prepn. of **cathode for lithium sulfur battery**)
- IT 9002-88-4, Polyethylene
RL: MOA (Modifier or additive use); USES (Uses)
(high d.; prepn. of **cathode for lithium sulfur battery**)
- IT 110-71-4 111-96-6, Diglyme 126-33-0, Sulfolane 646-06-0,
Dioxolane 1314-23-4, Zirconium oxide (ZrO₂), uses 7429-90-5,
Aluminum, uses 7704-34-9, Sulfur, uses 21324-40-3,
Lithium hexafluorophosphate 33454-82-9, Lithium triflate
RL: DEV (Device component use); USES (Uses)
(prepn. of **cathode for lithium sulfur battery**)
- IT 75-05-8, Acetonitrile, uses 109-99-9, Thf, uses 872-50-4,
n-Methyl-2-pyrrolidone, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; prepn. of **cathode for lithium sulfur battery**)
- IT 9003-55-8
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder coating; prepn. of **cathode for lithium sulfur battery**)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L54 ANSWER 18 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:300501 HCAPLUS
DOCUMENT NUMBER: 138:290456
TITLE: Method for preparation of cathode active
material composition for **lithium-
sulfur battery**
INVENTOR(S): Lee, Jea-Woan; Park, Seung-Hee
PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea
SOURCE: U.S. Pat. Appl. Publ., 13 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO. -----	KIND -----	DATE -----	APPLICATION NO. -----	DATE
US 2003073000	A1	20030417	US 2002-156796	200205 30
US 7018739	B2	20060328		
KR 2003032364	A	20030426	KR 2001-64096	200110 17
JP 2003123739	A2	20030425	JP 2002-175642	200206 17
CN 1412870	A	20030423	CN 2002-125136	200206 28
PRIORITY APPLN. INFO.:			KR 2001-64096	A 200110 17

AB A pos. active material includes a sulfur compd., a conductive agent adhered to the sulfur compd., and a binder including at least one polymer to bind the conductive agent to the sulfur compd. The sulfur compd. comprises one or more compd. selected from sulfur, Li_2Sn ($n \geq 1$), org. sulfur compd., and $(\text{C}_2\text{S}_x)_n$, where $x = 2.5-50$, and $n \geq 2$.

IT 9003-56-9

RL: MOA (Modifier or additive use); USES (Uses)
(**abs** rubber, binder; method for prepn. of cathode active material compn. for **lithium-sulfur battery**)

RN 9003-56-9 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

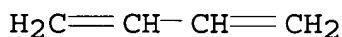
CMF C3 H3 N



CM 2

CRN 106-99-0

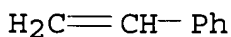
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



IT 9003-18-3

RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, binder; method for prepn. of cathode active
material compn. for **lithium-sulfur
battery**)

RN 9003-18-3 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

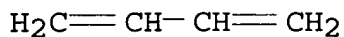
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder; method for prepn. of cathode
active material compn. for **lithium-sulfur
battery**)

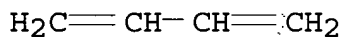
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

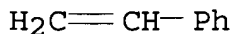
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IT 26835-21-2, Butadiene-ethylene-styrene
copolymer

RL: MOA (Modifier or additive use); USES (Uses)
(sulfonated, binder; method for prepn. of cathode active material
compn. for **lithium-sulfur battery**)

RN 26835-21-2 HCAPLUS

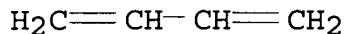
CN Benzene, ethenyl-, polymer with 1,3-butadiene and ethene (9CI) (CA

INDEX NAME)

CM 1

CRN 106-99-0

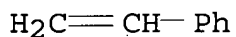
CMF C4 H6



CM 2

CRN 100-42-5

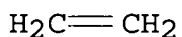
CMF C8 H8



CM 3

CRN 74-85-1

CMF C2 H4



IC ICM H01M004-58

ICS H01M004-62

INCL 429218100; 429232000; 429231950; 429217000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38ST cathode active material compn **lithium sulfur**
batteryIT **ABS** rubber

Fluoropolymers, uses

Nitrile rubber, uses

Polymers, uses

Polyolefins

Polyoxyalkylenes, uses

Polyurethanes, uses

Polyvinyl butyrals

Styrene-butadiene rubber, uses

- RL: MOA (Modifier or additive use); USES (Uses)
(binder; method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT Battery cathodes
(method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT Carbon black, uses
Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT 9003-56-9
RL: MOA (Modifier or additive use); USES (Uses)
(abs rubber, binder; method for prepn. of cathode
active material compn. for **lithium-sulfur
battery**)
- IT 9002-89-5, Polyvinyl alcohol 9003-19-4, Polyvinyl ether
9003-20-7, Polyvinyl acetate 9003-22-9, Vinyl acetate-vinyl
chloride copolymer 9003-39-8, Polyvinylpyrrolidone 9004-35-7,
Cellulose acetate 9010-88-2, Ethyl acrylate-methyl methacrylate
copolymer 24937-79-9, Polyvinylidene fluoride 25014-41-9,
Polyacrylonitrile 25086-89-9, Vinyl acetate-vinylpyrrolidone
copolymer 25322-68-3, Peo 49717-87-5, 2-Propenoic acid, ion(1-)
homopolymer, uses 49717-97-7, 2-Propenoic acid, 2-methyl-, ion(1-)
homopolymer, uses
RL: MOA (Modifier or additive use); USES (Uses)
(binder; method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, compd. 74432-42-1,
Lithium polysulfide
RL: DEV (Device component use); USES (Uses)
(method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
RL: MOA (Modifier or additive use); USES (Uses)
(method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT 67-63-0, Isopropyl alcohol, uses 75-05-8, Acetonitrile, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(method for prepn. of cathode active material compn. for
lithium-sulfur battery)
- IT 9003-18-3
RL: MOA (Modifier or additive use); USES (Uses)
(nitrile rubber, binder; method for prepn. of cathode active
material compn. for **lithium-sulfur
battery**)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, binder; method for prepn. of cathode
active material compn. for **lithium-sulfur
battery**)

IT 26835-21-2, **Butadiene-ethylene-styrene
copolymer**

RL: MOA (Modifier or additive use); USES (Uses)
(sulfonated, binder; method for prepn. of cathode active material
compn. for **lithium-sulfur battery**)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L54 ANSWER 19 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:28581 HCAPLUS

DOCUMENT NUMBER: 128:104357

TITLE: Solid state lithium batteries

INVENTOR(S): Takada, Kazunori; Fujino, Makoto; Iwamoto,
Kazuya; Kondo, Shigeo

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10003943	A2	19980106	JP 1996-154606	199606 14
JP 3297595	B2	20020702	JP 1996-154606	199606 14

PRIORITY APPLN. INFO.:

AB The batteries have a Li ion conductive solid electrolyte between a
pair of electrodes, where ≥ 1 of the electrodes is ≤ 0.2
mm thick, the electrolyte is ≤ 0.5 mm thick, and the binder
for the electrode or the electrolyte is a polymer contg. SO₃ or
SO₃-electron donor adduct groups added to C:C double bonds in the
polymer mol.

IT 9003-55-8DP, **Butadiene-styrene
copolymer**, hydrogenated, reaction products with

dioxane-sulfur trioxide adducts

RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)

(polymer binders contg. sulfur trioxide groups for electrodes and electrolytes in solid state lithium batteries)

RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6

$\text{H}_2\text{C}=\text{CH}-\text{CH}=\text{CH}_2$

CM 2

CRN 100-42-5

CMF C8 H8

$\text{H}_2\text{C}=\text{CH}-\text{Ph}$

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST solid electrolyte lithium battery polymer binder; electrode polymer binder lithium battery; **sulfur** trioxide adduct polymer **lithium** battery

IT Secondary **batteries**

(polymer binders contg. **sulfur** trioxide groups for solid state lithium batteries)

IT 9003-55-8DP, **Butadiene-styrene**

copolymer, hydrogenated, reaction products with dioxane-sulfur trioxide adducts 25034-71-3DP, Dicyclopentadiene-ethylene-propylene copolymer, reaction products with dioxane-sulfur trioxide adducts 25038-32-8DP, Isoprene-styrene copolymer, reaction products with dioxane-sulfur trioxide adducts 54287-50-2DP, reaction products with double bond contg. polymers 105729-79-1DP, Isoprene-styrene block copolymer, reaction products with dioxane-sulfur trioxide adducts

RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation);

PROC (Process); USES (Uses)

(polymer binders contg. sulfur trioxide groups for electrodes and electrolytes in solid state lithium batteries)

L54 ANSWER 20 OF 20 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:28568 HCAPLUS

DOCUMENT NUMBER: 128:117313

TITLE: Molded electrodes for lithium batteries

INVENTOR(S): Takata, Kazunori; Iwamoto, Kazuya; Kondo, Shigeo; Takeuchi, Yasumasa; Masaka, Fusazumi; Ishikawa, Katsuhiro

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan; Japan Synthetic Rubber Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 10003926	A2	19980106	JP 1996-154621	19960614
JP 3529943	B2	20040524		
PRIORITY APPLN. INFO.:			JP 1996-154621	19960614

AB The electrodes contain polymers, which have SO₃ or SO₃-electron donor adduct attached to C:C double bonds in the polymer mol. and can be electrochem. oxidized and reduced in a Li⁺ conductive electrolyte.

IT **9003-55-8D, Butadiene-styrene copolymer**, reaction products with sulfur trioxide-dioxane adducts

RL: DEV (Device component use); USES (Uses)

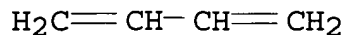
(binders from polymers contg. sulfur trioxide or sulfur trioxide-electron donor adduct on double bonds for secondary lithium battery electrodes)

RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

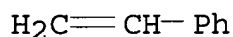
CM 1

CRN 106-99-0
CMF C4 H6



CM 2

CRN 100-42-5
CMF C8 H8



IC ICM H01M004-62
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery electrode sulfur**
trioxide polymer; **battery electrode sulfur**
trioxide contg polymer
IT 123-91-1D, Dioxane, sulfur trioxide adducts, reaction products with
double bond contg. polymers 7446-11-9D, Sulfur trioxide, reaction
products with double bond contg. polymers, uses 7782-42-5,
Graphite, uses 9003-55-8D, **Butadiene-**
styrene copolymer, reaction products with sulfur
trioxide-dioxane adducts 11113-63-6, Graphite fluoride
12031-65-1, Lithium nickel oxide (LiNiO₂) 12057-17-9, Lithium
manganese oxide (LiMn₂O₄) 12190-79-3, Cobalt lithium oxide
(CoLiO₂) 25034-71-3D, Dicyclopentadiene-ethylene-propylene
copolymer, reaction products with sulfur trioxide-dioxane adducts
25038-32-8D, Isoprene-styrene copolymer, reaction products with
sulfur trioxide-dioxane adducts 120479-61-0, Aluminum lithium
titanium phosphate [Al_{0.3}Li_{1.3}Ti_{1.7}(PO₄)₃]
RL: DEV (Device component use); USES (Uses)
(binders from polymers contg. sulfur trioxide or sulfur
trioxide-electron donor adduct on double bonds for secondary
lithium battery electrodes)

=> d 155 ibib abs hitstr hitind

L55 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:37229 HCAPLUS
DOCUMENT NUMBER: 144:111317

MEI HUANG EIC1700 REM4B28 571-272-3952

08/18/2006

TITLE: New organic/inorganic composite porous film for electrochemical device
 INVENTOR(S): Yong, Hyun-Hang; Lee, Sang-Young; Kim, Seok-Koo; Ahn, Soon-Ho; Suk, Jung-Don
 PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea
 SOURCE: PCT Int. Appl., 30 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2006004366	A1	20060112	WO 2005-KR2133	20050705
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
US 2006008700	A1	20060112	US 2005-175881	20050706
PRIORITY APPLN. INFO.:			KR 2004-52638	A 20040707
			KR 2004-70097	A 20040902

AB Disclosed is an org./inorg. composite porous film comprising: (a) a porous substrate having pores; and (b) an active layer formed by coating a surface of the substrate or a part of the pores in the substrate with a mixt. of inorg. particles and a **binder** polymer, wherein the inorg. particles in the active layer are interconnected among themselves and are fixed by the **binder**

polymer, and interstitial vols. among the inorg. particles form a pore structure. A method for manufg. the same film and an electrochem. device including the same film are also disclosed. An electrochem. device comprising the org./inorg. composite porous film shows improved safety and quality, simultaneously.

IT 9011-17-0, Hexafluoropropylene-vinylidene **fluoride**
copolymer

RL: MOA (Modifier or additive use); USES (Uses)

(glass, lithium phosphide sulfide; org./inorg. composite porous film for electrochem. device)

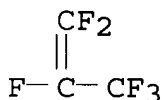
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
(9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4

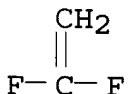
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



IT 7704-34-9, **Sulfur**, uses

RL: DEV (Device component use); USES (Uses)

(glass, **lithium** silicon sulfide; org./inorg. composite porous film for electrochem. device)

RN 7704-34-9 HCAPLUS

CN Sulfur (8CI, 9CI) (CA INDEX NAME)

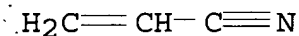
S

IT 9003-56-9, Acrylonitrile-butadiene-styrene
copolymer 87465-25-6, Trichloroethylene-vinylidene
fluoride copolymer
RL: MOA (Modifier or additive use); USES (Uses)
(org./inorg. composite porous film for electrochem. device)
RN 9003-56-9 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

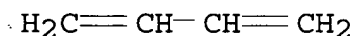
CMF C3 H3 N



CM 2

CRN 106-99-0

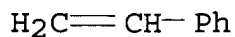
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



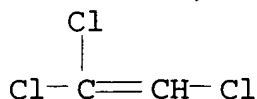
RN 87465-25-6 HCAPLUS

CN Ethene, trichloro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 79-01-6

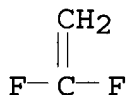
CMF C2 H Cl3



CM 2

CRN 75-38-7

CMF C2 H2 F2



IC ICM H01M002-16
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST safety **electrochem cell** org inorg composite
 porous film; **battery** org inorg composite porous film
 IT Secondary **batteries**
 (lithium; org./inorg. composite porous film for electrochem.
 device)
 IT **9011-17-0**, Hexafluoropropylene-vinylidene **fluoride**
copolymer
 RL: MOA (Modifier or additive use); USES (Uses)
 (glass, lithium phosphide sulfide; org./inorg. composite porous
 film for electrochem. device)
 IT 7440-21-3, Silicon, uses **7704-34-9**, **Sulfur**, uses
 RL: DEV (Device component use); USES (Uses)
 (glass, **lithium** silicon sulfide; org./inorg. composite
 porous film for electrochem. device)
 IT 57-50-1D, Sucrose, Cyanoethyl ethers 9000-11-7, Carboxymethyl
 cellulose 9002-89-5D, Polyvinyl alcohol, Cyanoethyl ethers
 9003-20-7, Polyvinyl acetate 9003-39-8, Polyvinylpyrrolidone
9003-56-9, Acrylonitrile-**butadiene**-styrene
copolymer 9004-35-7 9004-39-1, Cellulose acetate
 propionate 9004-41-5, Cyanoethyl cellulose 9011-14-7, PMMA
 9057-02-7, Pullulan 24937-78-8, Ethylene-vinyl acetate copolymer
 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 77466-56-9,
 Cyanoethylpullulan **87465-25-6**, Trichloroethylene-
 vinylidene **fluoride copolymer**
 RL: MOA (Modifier or additive use); USES (Uses)

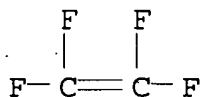
(org./inorg. composite porous film for electrochem. device)
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

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L60 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:1003783 HCAPLUS
DOCUMENT NUMBER: 143:269683
TITLE: Secondary nonaqueous electrolyte battery
INVENTOR(S): Koga, Hideyuki; Itaya, Shoji; Dojo, Kazunori;
Miyake, Masahide; Fujimoto, Masahisa
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005251516	A2	20050915	JP 2004-58933	20040303
PRIORITY APPLN. INFO.:				20040303

AB The battery has a **cathode** contg. **S** as active
mass and a **SBR binder**, an anode contg. a Li-intercalating
material; and a metal halide added nonaq. electrolyte.
IT **9002-84-0**, PTFE
RL: DEV (Device component use); USES (Uses)
(electrolytes contg. metal halide additives and cathodes contg.
SBR binders for secondary batteries)
RN **9002-84-0** HCAPLUS
CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)
CM 1
CRN 116-14-3
CMF C2 F4



IT 9003-55-8

RL: DEV (Device component use); USES (Uses)
 (styrene-butadiene rubber; electrolytes contg. metal halide
 additives and cathodes contg. SBR **binders** for secondary
 batteries)

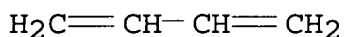
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

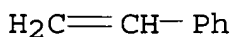
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M010-40

ICS H01M004-02; H01M004-38; H01M004-58; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **battery sulfur cathode** SBR
binder; battery electrolyte additive metal halide

IT Battery electrolytes

Secondary batteries

(electrolytes contg. metal halide additives and cathodes contg.
 SBR **binders** for secondary batteries)

IT Fluoropolymers, uses

Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)

(electrolytes contg. metal halide additives and cathodes contg.
 SBR **binders** for secondary batteries)

IT 110-71-4 646-06-0, 1,3-Dioxolane 7439-93-2, Lithium, uses
7704-34-9, Sulfur, uses **9002-84-0**, PTFE 90076-65-6
RL: DEV (Device component use); USES (Uses)
(electrolytes contg. metal halide additives and cathodes contg.
SBR **binders** for secondary batteries)
IT 7784-23-8, Aluminum iodide 10377-58-9, Magnesium iodide
RL: MOA (Modifier or additive use); USES (Uses)
(electrolytes contg. metal halide additives and cathodes contg.
SBR **binders** for secondary batteries)
IT **9003-55-8**
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; electrolytes contg. metal halide
additives and cathodes contg. SBR **binders** for secondary
batteries)

L60 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:920666 HCAPLUS

DOCUMENT NUMBER: 142:180334

TITLE: Preparation of **sulfur-based**
cathodes for batteries

INVENTOR(S): Cho, Ji Hun; Jang, Deok Rye; Jun, Sang Eun; Kim,
Hui Tak; Kim, Seon Uk; Ko, Gi Seok; Kwon, Chang
Wi

PATENT ASSIGNEE(S): Newturn Energy Co., Ltd., S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2002068783	A	20020828	KR 2001-9050	200102 22
PRIORITY APPLN. INFO.: KR 2001-9050				200102 22

AB This cathode has increased contact area between C and S, it
maintains uniform contact with the carbon, thereby increasing the
reaction velocity during discharging. The method entails dispersing
C and a **binder** into a solvent to prep. a slurry; coating
the slurry on a current collector and drying it to prep. a C matrix
on the current collector; dipping the current collector into a soln.

contg. S or a S melt to infiltrate S into the C matrix; and drying the S-infiltrated C matrix. The **binder** is selected from PVdF, PVdF-HFP **copolymer**, **butadiene-styrene copolymer**, acrylonitrile-**butadiene-styrene copolymer**, polytetrafluoroethylene, CMC, polyethylene and polypropylene. The current collector is selected from Al, etched Al, Ni, Cu and stainless steel. The solvent is selected from H₂O, N-methylpyrrolidone, MeCN, EtOH, MeOH and isoPr alc.

IT 9002-84-0, Polytetrafluoroethylene 9003-55-8,

Butadiene-styrene copolymer 9003-56-9,

Acrylonitrile-butadiene-styrene copolymer

9011-17-0 24937-79-9, PVdF

RL: DEV (Device component use); USES (Uses)

(**sulfur-based cathodes for batteries**
with)

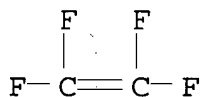
RN 9002-84-0 HCAPLUS

CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3

CMF C2 F4



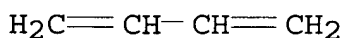
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

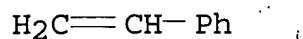
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



RN 9003-56-9 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene
(9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

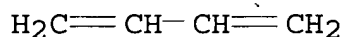
CMF C3 H3 N



CM 2

CRN 106-99-0

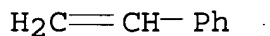
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



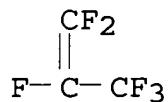
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
(9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4

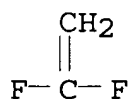
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



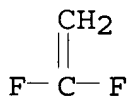
RN 24937-79-9 HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7

CMF C2 H2 F2



IC ICM H01M004-96

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **sulfur carbon cathode battery**IT **Battery cathodes**Primary **batteries**Secondary **batteries**(prepn. of **sulfur-based cathodes for batteries**)

IT Fluoropolymers, uses

RL: DEV (Device component use); USES (Uses)

(sulfur-based **cathodes for batteries** with)

IT 7440-44-0, Carbon, uses 7704-34-9, Sulfur, uses

RL: DEV (Device component use); USES (Uses)

(prepn. of **sulfur-based cathodes for batteries**)

IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 67-63-0,
2-Propanol, uses 75-05-8, Acetonitrile, uses 872-50-4,
N-Methylpyrrolidone, uses 7429-90-5, Aluminum, uses 7440-02-0,
Nickel, uses 7440-50-8, Copper, uses 7732-18-5, Water, uses
9002-84-0, Polytetrafluoroethylene 9002-88-4, Polyethylene
9003-07-0, Polypropylene **9003-55-8**, **Butadiene**
-styrene **copolymer 9003-56-9**, Acrylonitrile-
butadiene-styrene copolymer 9011-17-0
12597-68-1, Stainless steel, uses **24937-79-9**, PVdF
RL: DEV (Device component use); USES (Uses)
(**sulfur-based cathodes for batteries**
with)

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L61 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:1129921 HCAPLUS
DOCUMENT NUMBER: 143:370132
TITLE: Lithium ion secondary batteries and their
manufacture
INVENTOR(S): Kato, Kiyomi; Inoue, Kaoru
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005294139	A2	20051020	JP 2004-109806	200404 02

PRIORITY APPLN. INFO.: JP 2004-109806

200404
02

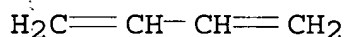
AB The battery comprises (a) a lithium mixed oxide cathode, (b) an anode, (c) a separator, (d) a nonaq. electrolyte soln., and (e) a porous film formed on the surface(s) of the **cathode** or the anode. The said porous film consists of inorg. particles and **binders** with the particles on the surface side having larger size than those on the side contacting the electrode. Preferably, the size of the particles in the surface

part is 1-3 μm and that in the part nearest to the electrode is 0.1-0.5 μm . The batteries have excellent resistance to short circuit and heat.

IT 9003-18-3D, hydrogenated
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, BM-720H, **binder**; manuf. of Li ion secondary batteries with particle size-graded porous layer on electrode surface for heat resistance)
RN 9003-18-3 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)
CM 1
CRN 107-13-1
CMF C3 H3 N



CM 2
CRN 106-99-0
CMF C4 H6



IC ICM H01M010-40
ICS H01M002-16; H01M004-04
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Nitrile rubber, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(hydrogenated, BM-720H, **binder**; manuf. of Li ion secondary batteries with particle size-graded porous layer on electrode surface for heat resistance)
IT 9003-18-3D, hydrogenated
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(nitrile rubber, BM-720H, **binder**; manuf. of Li ion secondary batteries with particle size-graded porous layer on electrode surface for heat resistance)

L61 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:231364 HCAPLUS
DOCUMENT NUMBER: 130:239909
TITLE: Electrode for secondary nonaqueous electrolyte
batteries
INVENTOR(S): Goto, Shinya; Urushibara, Masaru; Kosaka,
Atsushi; Kato, Fumio
PATENT ASSIGNEE(S): Nippon Denso Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 11097024	A2	19990409	JP 1997-258522	199709 24
PRIORITY APPLN. INFO.:			JP 1997-258522	199709 24

AB The electrodes have an active mass bonded by a crosslinked elastomer
binder. The elastomers are crosslinked by their double
bonds by S or S compds. or an org. peroxide.

IT **9003-17-2**

RL: DEV (Device component use); USES (Uses)
(butadiene rubber, compns. of electrodes contg. sulfur or
peroxide crosslinked elastomer **binders** for secondary
nonaq. batteries)

RN 9003-17-2 HCAPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6

$\text{H}_2\text{C}=\text{CH}-\text{CH}=\text{CH}_2$

IT **9003-18-3**

RL: DEV (Device component use); USES (Uses)

(nitrile rubber, compns. of electrodes contg. sulfur or peroxide crosslinked elastomer **binders** for secondary nonaq. batteries)

RN 9003-18-3 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

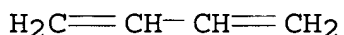
CMF C3 H3 N



CM 2

CRN 106-99-0

CMF C4 H6



IC ICM H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrode crosslinked elastomer **binder**;

sulfur crosslinked elastomer **binder**

battery electrode; peroxide crosslinked elastomer

binder battery electrode

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)

(compns. of anodes contg. sulfur or peroxide crosslinked elastomer **binders** for secondary nonaq. batteries)

IT Battery electrodes

(compns. of electrodes contg. sulfur or peroxide crosslinked elastomer **binders** for secondary nonaq. batteries)

IT Butadiene rubber, uses

Nitrile rubber, uses

RL: DEV (Device component use); USES (Uses)

(compns. of electrodes contg. sulfur or peroxide crosslinked elastomer **binders** for secondary nonaq. batteries)

IT Synthetic rubber, uses

RL: DEV (Device component use); USES (Uses)

(sulfur or peroxide crosslinked elastomer **binders** for electrodes in secondary nonaq. batteries)

IT 9003-17-2

RL: DEV (Device component use); USES (Uses)
(butadiene rubber, compns. of electrodes contg. sulfur or peroxide crosslinked elastomer **binders** for secondary nonaq. batteries)

IT 57-11-4, Stearic acid, uses 120-78-5, Mbts 1314-13-2, Zinc oxide, uses 7704-34-9, Sulfur, uses

RL: DEV (Device component use); USES (Uses)
(compns. of electrodes contg. sulfur or peroxide crosslinked elastomer **binders** for secondary nonaq. batteries)

IT 9003-18-3

RL: DEV (Device component use); USES (Uses)
(nitrile rubber, compns. of electrodes contg. sulfur or peroxide crosslinked elastomer **binders** for secondary nonaq. batteries)

L61 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1985:169732 HCAPLUS

DOCUMENT NUMBER: 102:169732

TITLE: Plate-type beta" alumina electrolytes for an advanced sodium-sulfur cell design

AUTHOR(S): Pett, Robert A.; Theodore, Ares N.; Tennenhouse, Gerald J.; Runkle, Franklin D.

CORPORATE SOURCE: Ford Motor Co., Dearborn, MI, 48121, USA

SOURCE: American Ceramic Society Bulletin (1985), 64(4), 589-92

CODEN: ACSBA7; ISSN: 0002-7812

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A process was developed for the prepn. of plate-type β'' -alumina membranes (for Na- **S batteries**) by compression molding of a **polymer** (styrene-**butadiene**-based) **binder**/ceramic mixt. and subsequent processing leading to a sintered, dense ceramic. The properties of the ceramic prepd. by this process are comparable to material prepd. by the traditional method of isostatic pressing and sintering as indicated by strength, microstructure, cond., and cell behavior.

IT 9003-55-8

RL: USES (Uses)
(rubber, butadiene-styrene; **binder**, in manuf. of alumina electrolytes for advanced sodium-**sulfur battery**)

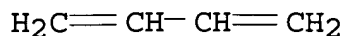
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

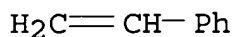
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 39, 57

ST sodium **sulfur battery** alumina electrolyte;
styrene butadiene **binder** alumina electrolyte

IT Rubber, butadiene-styrene, uses and miscellaneous

RL: USES (Uses)

(**binder**, in manuf. of alumina electrolytes for advanced
sodium-**sulfur battery**)

IT **Batteries**, secondary
(sodium-**sulfur**, alumina electrolyte for advanced
design, plate-type)

IT 9003-55-8

RL: USES (Uses)

(rubber, butadiene-styrene; **binder**, in manuf. of
alumina electrolytes for advanced sodium-**sulfur**
battery)

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L62 ANSWER 1 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:481472 HCAPLUS

DOCUMENT NUMBER: 145:66249

TITLE: Preparation of lithium-ion **battery**
positive electrode material
with high specific capacity

INVENTOR(S): Lin, Yunqing; Chen, Zewei; Zeng, Pengcheng

PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 12
pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
CN 1773753	A	20060517	CN 2004-10088546	200411 08

PRIORITY APPLN. INFO.: CN 2004-10088546
200411
08

IT 12136-58-2, Lithium sulfide
RL: TEM (Technical or engineered material use); USES (Uses)
(prepn. of lithium-ion **battery pos.**
electrode material with high specific capacity)
RN 12136-58-2 HCAPLUS
CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

IT 9003-55-8
RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber; prepn. of lithium-ion **battery**
pos. electrode material with high specific
capacity)
RN 9003-55-8 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)
CM 1
CRN 106-99-0
CMF C4 H6

H₂C=CH-CH=CH₂

CM 2

CRN 100-42-5

CMF C8 H8

 $\text{H}_2\text{C}=\text{CH}-\text{Ph}$

- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
- ST lithium ion secondary **battery pos**
electrode material manuf
- IT Secondary **batteries**
(lithium; prepn. of lithium-ion **battery pos.**
electrode material with high specific capacity)
- IT **Battery cathodes**
Calcination
Coating process
Coprecipitation
(prepn. of lithium-ion **battery pos.**
electrode material with high specific capacity)
- IT Fluoropolymers, uses
Polyoxyalkylenes, uses
Styrene-butadiene rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(prepn. of lithium-ion **battery pos.**
electrode material with high specific capacity)
- IT 1310-73-2, Sodium hydroxide, uses 1336-21-6, Ammonium hydroxide
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP
(Physical, engineering or chemical process); PROC (Process); USES
(Uses)
(prepn. of lithium-ion **battery pos.**
electrode material with high specific capacity)
- IT 71-48-7, Cobalt acetate 373-02-4, Nickel acetate 554-13-2,
Lithium carbonate 1310-65-2, Lithium hydroxide 7786-81-4, Nickel
sulfate 10043-01-3, Aluminum sulfate 10124-43-3, Cobalt sulfate
10141-05-6, Cobalt nitrate 13138-45-9, Nickel nitrate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)
(prepn. of lithium-ion **battery pos.**
electrode material with high specific capacity)
- IT 1303-86-2, Boron trioxide, uses 1309-37-1, Ferric oxide, uses
1309-48-4, Magnesium oxide, uses 1314-23-4, Zirconium dioxide,
uses 7631-86-9, Silicon dioxide, uses 7789-24-4, Lithium
fluoride, uses 9002-84-0, Polytetrafluoroethylene 9002-89-5,
Polyvinyl alcohol 9003-05-8, Polyacrylamide 9011-17-0,

Vinylidene fluoride-hexafluoropropylene copolymer 10377-52-3,
Lithium phosphate 12007-60-2, Lithium borate 12057-24-8, Lithium
oxide, uses 12136-58-2, Lithium sulfide 12627-14-4,
Lithium silicate 13463-67-7, Titanium dioxide, uses 18282-10-5,
Tin dioxide 24937-79-9, Poly(vinylidene fluoride) 25322-68-3,
Polyethylene oxide 50927-81-6, Silicon sulfide 193214-44-7,
Aluminum cobalt lithium nickel oxide (Al_{0.15}Co_{0.1}LiNi_{0.75}O₂)
891484-55-2

RL: TEM (Technical or engineered material use); USES (Uses)
(prepn. of lithium-ion **battery pos.**
electrode material with high specific capacity)

IT 9003-55-8

RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber; prepn. of lithium-ion **battery**
pos. electrode material with high specific
capacity)

L62 ANSWER 2 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:481469 HCAPLUS

DOCUMENT NUMBER: 145:66248

TITLE: Manufacture of lithium-ion secondary
battery with positive
electrode made of nickel-based active
material

INVENTOR(S): Lin, Yunqing; Chen, Zewei; Zeng, Pengcheng

PATENT ASSIGNEE(S): Shenzhen Bak Battery Co., Ltd., Peop. Rep. China

SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 13
pp.

CODEN: CNXXEV

DOCUMENT TYPE: Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
CN 1773763	A	20060517	CN 2004-10088545	200411 08
PRIORITY APPLN. INFO.:			CN 2004-10088545	200411 08

IT 12136-58-2, Lithium sulfide

RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)

(manuf. of lithium-ion secondary **battery** with
pos. electrode made of nickel-based active
material)

RN 12136-58-2 HCAPLUS

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

IT 9003-55-8

RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)

(styrene-butadiene rubber; manuf. of lithium-ion secondary
battery with **pos. electrode** made of
nickel-based active material)

RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6

H₂C=CH-CH=CH₂

CM 2

CRN 100-42-5

CMF C8 H8

H₂C=CH-Ph

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium ion secondary **battery** manuf **pos**
electrode

IT Secondary **batteries**

(lithium; manuf. of lithium-ion secondary **battery** with
pos. electrode made of nickel-based active
material)

IT **Battery cathodes**
Calcination

Coating process

Coprecipitation

(manuf. of lithium-ion secondary **battery** with
pos. electrode made of nickel-based active
material)

IT Carbon black, uses

RL: DEV (Device component use); USES (Uses)

(manuf. of lithium-ion secondary **battery** with
pos. electrode made of nickel-based active
material)

IT Fluoropolymers, uses

Polyoxyalkylenes, uses

Styrene-butadiene rubber, uses

RL: DEV (Device component use); TEM (Technical or engineered
material use); USES (Uses)

(manuf. of lithium-ion secondary **battery** with
pos. electrode made of nickel-based active
material)

IT 7440-44-0, Super P, uses

RL: DEV (Device component use); USES (Uses)

(activated; manuf. of lithium-ion secondary **battery**
with **pos. electrode** made of nickel-based
active material)

IT 1310-73-2, Sodium hydroxide, uses 1336-21-6, Ammonium hydroxide

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP
(Physical, engineering or chemical process); PROC (Process); USES
(Uses)

(manuf. of lithium-ion secondary **battery** with
pos. electrode made of nickel-based active
material)

IT 373-02-4, Nickel acetate 554-13-2, Lithium carbonate 1310-65-2,
Lithium hydroxide 2180-18-9, Manganese acetate 5931-89-5, Cobalt
acetate 7785-87-7, Manganese sulfate 7786-81-4, Nickel sulfate
10124-43-3, Cobalt sulfate 10141-05-6, Cobalt nitrate

10377-66-9, Manganese nitrate 13138-45-9, Nickel nitrate
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)

(manuf. of lithium-ion secondary **battery** with
pos. electrode made of nickel-based active
material)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(manuf. of lithium-ion secondary **battery** with
pos. electrode made of nickel-based active
material)

IT 1303-86-2, Boron trioxide, uses 1309-48-4, Magnesium oxide, uses

1313-13-9, Manganese dioxide, uses 1314-13-2, Zinc oxide, uses

1314-23-4, Zirconium dioxide, uses 1314-62-1, Vanadium pentoxide, uses 1344-28-1, Aluminum oxide, uses 7631-86-9, Silicon dioxide, uses 7784-30-7, Aluminum phosphate 7789-24-4, Lithium fluoride, uses 9002-84-0, Polytetrafluoroethylene 9002-89-5, Polyvinyl alcohol 9003-05-8, Polyacrylamide 9005-25-8, Starch, uses 9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer 10377-52-3, Lithium phosphate 12057-24-8, Lithium oxide, uses 12136-58-2, Lithium sulfide 12627-14-4, Lithium silicate 12676-27-6 13463-67-7, Titanium dioxide, uses 18282-10-5, Tin dioxide 24937-79-9, Poly(vinylidene fluoride) 25322-68-3, Polyethylene oxide 50927-81-6, Silicon sulfide 891484-60-9
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(manuf. of lithium-ion secondary **battery** with **pos. electrode** made of nickel-based active material)

IT 9003-55-8

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(styrene-butadiene rubber; manuf. of lithium-ion secondary **battery** with **pos. electrode** made of nickel-based active material)

L62 ANSWER 3 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1190833 HCAPLUS
DOCUMENT NUMBER: 144:68501
TITLE: Cyclin T1 Expression Is Regulated by Multiple Signaling Pathways and Mechanisms during Activation of Human Peripheral Blood Lymphocytes
AUTHOR(S): Marshall, Renee M.; Salerno, Dominic; Garriga, Judit; Grana, Xavier
CORPORATE SOURCE: Fels Institute for Cancer Research and Molecular Biology and Department of Biochemistry, Temple University School of Medicine, Philadelphia, PA, 19140, USA
SOURCE: Journal of Immunology (2005), 175(10), 6402-6411
CODEN: JOIMA3; ISSN: 0022-1767
PUBLISHER: American Association of Immunologists
DOCUMENT TYPE: Journal
LANGUAGE: English
CC 15-10 (Immunochemistry)
REFERENCE COUNT: 62 THERE ARE 62 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 4 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:99769 HCAPLUS

DOCUMENT NUMBER: 142:201580
 TITLE: Method of preparation of anode active material
 for lithium secondary **battery**
 INVENTOR(S): Lee, Sung-Man; Lee, Heon Young; Hong, Moon Ki
 PATENT ASSIGNEE(S): LG Chem, Ltd., S. Korea; Kangwon National
 University Industry Cooperation Foundation
 SOURCE: PCT Int. Appl., 28 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005011030	A1	20050203	WO 2004-KR1914	20040729
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
KR 2005013841	A	20050205	KR 2003-52422	20030729
CA 2533863	AA	20050203	CA 2004-2533863	20040729
EP 1652248	A1	20060503	EP 2004-774231	20040729
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
PRIORITY APPLN. INFO.:			KR 2003-52422	A
				20030729

WO 2004-KR1914

W

200407

29

IT 12136-58-2, Lithium sulfide (Li₂S)
RL: DEV (Device component use); USES (Uses)
(method of prepn. of anode active material for lithium secondary
battery)
RN 12136-58-2 HCAPLUS
CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

IC ICM H01M004-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST anode active material prepn lithium secondary battery
IT Secondary batteries
(lithium; method of prepn. of anode active material for lithium
secondary battery)
IT Battery anodes
Formation enthalpy
(method of prepn. of anode active material for lithium secondary
battery)
IT Carbonaceous materials (technological products)
RL: MOA (Modifier or additive use); USES (Uses)
(method of prepn. of anode active material for lithium secondary
battery)
IT 7440-21-3, Silicon, uses 7631-86-9, Silica, uses
12136-58-2, Lithium sulfide (Li₂S) 37220-89-6, Aluminum
lithium oxide 140444-99-1, Aluminum lithium oxide sulfide (AlLiOS)
RL: DEV (Device component use); USES (Uses)
(method of prepn. of anode active material for lithium secondary
battery)
IT 7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-93-2,
Lithium, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese,
uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses
7440-03-1, Niobium, uses 7440-25-7, Tantalum, uses 7440-31-5,
Tin, uses 7440-32-6, Titanium, uses 7440-36-0, Antimony, uses
7440-42-8, Boron, uses 7440-47-3, Chromium, uses 7440-48-4,
Cobalt, uses 7440-56-4, Germanium, uses 7440-62-2, Vanadium,
uses 7440-65-5, Yttrium, uses 7440-67-7, Zirconium, uses
7440-70-2, Calcium, uses 7440-74-6, Indium, uses 7723-14-0,
Phosphorus, uses 7727-37-9, Nitrogen, uses
RL: MOA (Modifier or additive use); USES (Uses)
(method of prepn. of anode active material for lithium secondary

battery)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 5 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:1038566 HCAPLUS
DOCUMENT NUMBER: 142:25893
TITLE: Secondary battery
INVENTOR(S): Koga, Hideyuki; Itaya, Shoji; Dojo, Kazunori; Miyake, Masahide; Fujimoto, Masahisa
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2004342575	A2	20041202	JP 2003-337866	20030929
				20030425

PRIORITY APPLN. INFO.: JP 2003-122458 A

IT 7704-34-9, Sulfur, uses
RL: DEV (Device component use); USES (Uses)
(secondary **batteries** contg. **sulfur** in **cathodes** and room-temp. molten salts in electrolytes)
RN 7704-34-9 HCAPLUS
CN Sulfur (8CI, 9CI) (CA INDEX NAME)

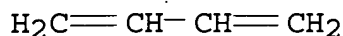
S

IT 9003-55-8
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; secondary **batteries** contg. **sulfur** in **cathodes** and room-temp. molten salts in electrolytes)
RN 9003-55-8 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-58

ICS H01M004-02; H01M004-38; H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **battery cathode sulfur**
electrolyte room temp molten saltIT Secondary **batteries**
(secondary **batteries** contg. **sulfur** in
cathodes and room-temp. molten salts in electrolytes)IT Fluoropolymers, uses
Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(secondary **batteries** contg. **sulfur** in
cathodes and room-temp. molten salts in electrolytes)IT 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane
7439-93-2, Lithium, uses **7704-34-9, Sulfur**, uses
9002-84-0, Polytetrafluoroethylene 90076-65-6 268536-05-6,
Trimethyl propyl ammonium bis(trifluoromethylsulfonyl) imide
RL: DEV (Device component use); USES (Uses)
(secondary **batteries** contg. **sulfur** in
cathodes and room-temp. molten salts in electrolytes)IT **9003-55-8**
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber; secondary **batteries** contg.
sulfur in **cathodes** and room-temp. molten salts
in electrolytes)

L62 ANSWER 6 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:1037168 HCAPLUS
DOCUMENT NUMBER: 142:24024
TITLE: Long fiber-reinforced polypropylene-
polyphenylene ether alloy material and its
preparation and application
INVENTOR(S): Yang, Guisheng; Li, Hong; Qin, Qingwu; Lu,
Xuexing
PATENT ASSIGNEE(S): Shanghai Genius Advanced Material Co., Ltd.,
Peop. Rep. China
SOURCE: PCT Int. Appl., 24 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2004104089	A1	20041202	WO 2004-CN475	200405 12
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CN 1548469	A	20041124	CN 2003-117089	200305 22
PRIORITY APPLN. INFO.:			CN 2003-117089	A 200305 22

IT 694491-73-1, Butadiene-styrene triblock
copolymer

RL: MOA (Modifier or additive use); USES (Uses)
(compatibilizer; long fiber-reinforced polypropylene-
polyoxyphenylene blends with improved impact resistance,
rigidity, and dimensional stability)

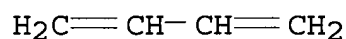
RN 694491-73-1 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

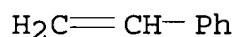
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IT 9003-56-9, ABS resin

RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(long fiber-reinforced polypropylene-polyoxyphenylene blends with improved impact resistance, rigidity, and dimensional stability)

RN 9003-56-9 HCAPLUS

CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1

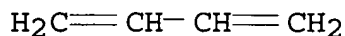
CMF C3 H3 N



CM 2

CRN 106-99-0

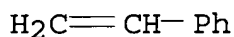
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



IT 694491-73-1D, hydrogenated

RL: MOA (Modifier or additive use); USES (Uses)

(styrene-butadiene rubber, compatibilizer; long fiber-reinforced polypropylene-polyoxyphenylene blends with improved impact resistance, rigidity, and dimensional stability)

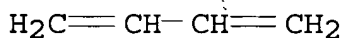
RN 694491-73-1 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene, triblock (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

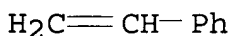
CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM C08L023-12

CC 37-6 (Plastics Manufacture and Processing)

ST polypropylene polyphenylene ether blend long glass fiber reinforcement; creep impact resistance rigidity polypropylene polyphenylene ether blend; **ABS** resin polypropylene polyoxyphenylene blend; nylon polypropylene polyoxyphenylene blend

IT 108-31-6, Maleic anhydride, uses 108-31-6D, Maleic anhydride, reaction products with polypropylene 9003-07-0D, Polypropylene, maleated 9011-13-6, Maleic anhydride-styrene copolymer 694491-73-1, Butadiene-styrene triblock copolymer
RL: MOA (Modifier or additive use); USES (Uses)
(compatibilizer; long fiber-reinforced polypropylene-polyoxyphenylene blends with improved impact resistance, rigidity, and dimensional stability)

IT 9003-07-0, Polypropylene 9003-56-9, ABS resin 25038-54-4, Nylon 6, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(long fiber-reinforced polypropylene-polyoxyphenylene blends with improved impact resistance, rigidity, and dimensional stability)

IT 694491-73-1D, hydrogenated 694491-73-1D, hydrogenated, block, triblock
RL: MOA (Modifier or additive use); USES (Uses)
(styrene-butadiene rubber, compatibilizer; long fiber-reinforced polypropylene-polyoxyphenylene blends with improved impact resistance, rigidity, and dimensional stability)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 7 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:780200 HCAPLUS
DOCUMENT NUMBER: 141:246156
TITLE: All solid-state thin-film **battery** and application thereof
INVENTOR(S): Ito, Shuji; Ugaji, Masaya; Mino, Shinji; Inaba, Junichi
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 15 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004185336	A1	20040923	US 2004-778168	20040217
JP 2004273436	A2	20040930	JP 2004-16261	200401

PRIORITY APPLN. INFO.:

JP 2003-39617

A

23

200302

18

IT 9003-17-2, Polybutadiene
RL: DEV (Device component use); USES (Uses)
(buffer layer material; all solid-state thin-film **battery**
and application thereof)

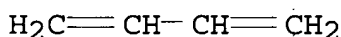
RN 9003-17-2 HCAPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

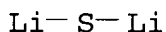
CRN 106-99-0

CMF C4 H6



IT 12136-58-2, Lithium sulfide
RL: DEV (Device component use); USES (Uses)
(glass; all solid-state thin-film **battery** and
application thereof)

RN 12136-58-2 HCAPLUS

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

IC ICM H01M006-46

ICS H01M002-24

INCL 429152000; 429160000; 429162000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** all solid state thin film

IT Solid state secondary **batteries**
(all solid-state thin-film **battery** and application
thereof)

IT Carbonaceous materials (technological products)
Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)
(all solid-state thin-film **battery** and application
thereof)

IT Polymerization
(plasma; all solid-state thin-film **battery** and

- application thereof)
- IT Epoxy resins, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(substrate; all solid-state thin-film **battery** and application thereof)
- IT 1314-62-1, Vanadium oxide (V2O5), uses 7439-93-2, Lithium, uses 12031-65-1, Lithium nickel oxide LiNiO_2 12031-95-7, Lithium titanium oxide LiTiO_2 12057-17-9, Lithium manganese oxide LiMn_2O_4 12190-79-3, Cobalt lithium oxide CoLiO_2 174421-80-8, Cobalt lithium nitride $\text{Co}_0.4\text{Li}_{2.6}\text{N}$ 477704-33-9, Lithium nitride oxide phosphide ($\text{Li}_{2.9}\text{N}_{0.46}\text{O}_{3.3}\text{P}$)
RL: DEV (Device component use); USES (Uses)
(all solid-state thin-film **battery** and application thereof)
- IT 7440-22-4, Silver, uses 7440-57-5, Gold, uses 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-17-2, Polybutadiene 9003-20-7, Polyvinyl acetate 9003-21-8, Polymethyl acrylate 9011-14-7, Polymethyl methacrylate 25012-93-5, Polycyclohexane 25053-22-9, Polybenzene 25322-69-4, Polypropylene oxide 26298-61-3, PolyHexamethyldisiloxane 36427-13-1, Polyethane
RL: DEV (Device component use); USES (Uses)
(buffer layer material; all solid-state thin-film **battery** and application thereof)
- IT 7440-06-4, Platinum, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(coating; all solid-state thin-film **battery** and application thereof)
- IT 10377-52-3, Lithium phosphate 12136-58-2, Lithium sulfide 13759-10-9, Silicon sulfide SiS_2
RL: DEV (Device component use); USES (Uses)
(glass; all solid-state thin-film **battery** and application thereof)

L62 ANSWER 8 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:512756 HCAPLUS
DOCUMENT NUMBER: 141:57084
TITLE: Sodium-sulphur battery
having solid electrolyte tube containing β -alumina
INVENTOR(S): Bito, Akihiro; Kawamura, Yoshifumi
PATENT ASSIGNEE(S): NGK Insulators, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM.. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004178991	A2	20040624	JP 2002-344112	20021127

PRIORITY APPLN. INFO.: JP 2002-344112 20021127

IC ICM H01M010-39
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST sodium **sulfur battery** solid electrolyte tube alumina
IT Secondary **batteries**:
(sodium-**sulfur battery** having solid electrolyte tube contg. β -alumina)
IT 7440-23-5, Sodium, uses 7704-34-9, **Sulfur**, uses
RL: DEV (Device component use); USES (Uses)
(sodium-**sulfur battery** having solid electrolyte tube contg. β -alumina)
IT 7440-37-1, Argon, uses
RL: NUU (Other use, unclassified); USES (Uses)
(sodium-**sulfur battery** having solid electrolyte tube contg. β -alumina)
IT 1344-28-1, Alumina, uses
RL: DEV (Device component use); USES (Uses)
(β -; sodium- **sulfur battery** having solid electrolyte tube contg. β -alumina)

L62 ANSWER 9 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:437556 HCAPLUS
DOCUMENT NUMBER: 139:263214
TITLE: Silicone as a binder in composite electrolytes
AUTHOR(S): Inada, Taro; Takada, Kazunori; Kajiyama, Akihisa; Sasaki, Hideki; Kondo, Shigeo; Watanabe, Mamoru; Murayama, Masahiro; Kanno, Ryoji
CORPORATE SOURCE: Advanced Materials Laboratory, National Institute for Materials Science, Tsukuba, Ibaraki, 305-0044, Japan
SOURCE: Journal of Power Sources (2003), 119-121, 948-950
CODEN: JPSODZ; ISSN: 0378-7753
PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal
LANGUAGE: English

IT 12136-58-2P, Lithium sulfide (Li₂S)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(glass, phosphate sulfide, electrolyte composite with silicone rubber, CP-2000, or SBR; effect of silicone rubber as binder in composite electrolytes)
RN 12136-58-2 HCAPLUS
CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

IT 106107-54-4
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, block, electrolyte composite with lithium-ion conductive phosphate sulfide and thio-phosphate glasses; effect of silicone rubber as binder in composite electrolytes)
RN 106107-54-4 HCAPLUS
CN Benzene, ethenyl-, polymer with 1,3-butadiene, block (9CI) (CA INDEX NAME)
CM 1
CRN 106-99-0
CMF C4 H6

H₂C=CH-CH=CH₂

CM 2
CRN 100-42-5
CMF C8 H8

H₂C=CH-Ph

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 36, 38, 76

ST silicone rubber binder composite electrolyte SBR polyoxyalkylene solid **battery**; ionic cond lithium ion germanium phosphate sulfide thiosulfide glass

IT **Battery** electrolytes
Binders
Polymer electrolytes
(effect of silicone rubber as binder in composite electrolytes)

IT 10377-52-3P, Lithium phosphate (Li_3PO_4) **12136-58-2P**,
Lithium sulfide (Li_2S) 13759-10-9P, Silicon sulfide (SiS_2)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(glass, phosphate sulfide, electrolyte composite with silicone rubber, CP-2000, or SBR; effect of silicone rubber as binder in composite electrolytes)

IT **106107-54-4**
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, block, electrolyte composite with lithium-ion conductive phosphate sulfide and thio-phosphate glasses; effect of silicone rubber as binder in composite electrolytes)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L62 ANSWER 10 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:162951 HCAPLUS

DOCUMENT NUMBER: 139:87746

TITLE: Fabrication and properties of composite solid-state electrolytes

AUTHOR(S): Inada, Taro; Takada, Kazunori; Kajiyama, Akihisa; Kouguchi, Masaru; Sasaki, Hideki; Kondo, Shigeo; Watanabe, Mamoru; Murayama, Masahiro; Kanno, Ryoji

CORPORATE SOURCE: Advanced Materials Laboratory, National Institute for Materials Science, Tsukuba, Ibaraki, 305-0044, Japan

SOURCE: Solid State Ionics (2003), 158(3,4), 275-280
CODEN: SSIOD3; ISSN: 0167-2738

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

IT **12136-58-2**, Lithium sulfide
RL: DEV (Device component use); USES (Uses)
(electrolyte glass contg.; prepn. and properties of glass-rubber

composite solid-state electrolytes for lithium **batteries**
)

RN 12136-58-2 HCAPLUS

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

IT 9003-55-8

RL: DEV (Device component use); USES (Uses)

(styrene-butadiene rubber, binder; prepn. and properties of
glass-rubber composite solid-state electrolytes for lithium
batteries)

RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6

H₂C=CH-CH=CH₂

CM 2

CRN 100-42-5

CMF C8 H8

H₂C=CH-Ph

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 39, 76

ST oxysulfide glass rubber composite solid electrolyte lithium
battery

IT Silicone rubber, uses

Styrene-butadiene rubber, uses

RL: DEV (Device component use); USES (Uses)

(binder; prepn. and properties of glass-rubber composite
solid-state electrolytes for lithium **batteries**)

IT Sulfide glasses

RL: DEV (Device component use); USES (Uses)

(electrolytes; prepn. and properties of glass-rubber composite solid-state electrolytes for lithium **batteries**)

IT **Battery** electrolytes

Solid electrolytes

(prepn. and properties of glass-rubber composite solid-state electrolytes for lithium **batteries**)

IT 10377-52-3, Lithium phosphate **12136-58-2**, Lithium sulfide
13759-10-9, Silicon disulfide

RL: DEV (Device component use); USES (Uses)

(electrolyte glass contg.; prepn. and properties of glass-rubber composite solid-state electrolytes for lithium **batteries**)

IT 361393-39-7

RL: DEV (Device component use); USES (Uses)

(electrolyte; prepn. and properties of glass-rubber composite solid-state electrolytes for lithium **batteries**)

IT **9003-55-8**

RL: DEV (Device component use); USES (Uses)

(styrene-butadiene rubber, binder; prepn. and properties of glass-rubber composite solid-state electrolytes for lithium **batteries**)

REFERENCE COUNT:

10

THERE ARE 10 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L62 ANSWER 11 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:56629 HCAPLUS

DOCUMENT NUMBER: 138:124972

TITLE: Lithium ion-conductive sulfide-type solid
electrolyte molding and lithium **battery**
using the electrolyte

INVENTOR(S): Inada, Taro; Takada, Kazunori; Kondo, Shigeo;
Watanabe, Jun; Kanno, Ryoji; Kajiyama, Akihisa;
Sasaki, Hideki

PATENT ASSIGNEE(S): National Institute for Research In Inorganic
Materials, Japan; Toda Kogyo Corp.; Japan
Storage Battery Co., Ltd.; Denki Kagaku Kogyo
Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

MEI HUANG EIC1700 REM4B28 571-272-3952

08/18/2006

JP 2003022707

A2 20030124

JP 2001-206456

200107
06

PRIORITY APPLN. INFO.:

JP 2001-206456

200107
06

IT 12136-58-2, Lithium sulfide

RL: RCT (Reactant); RACT (Reactant or reagent)

(for prepn. of lithium ion-conductive sulfide-type solid
electrolyte molding for lithium **battery**)

RN 12136-58-2 HCAPLUS

CN Lithium sulfide (Li₂S) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

Li-S-Li

IT 9003-55-8

RL: TEM (Technical or engineered material use); USES (Uses)

(styrene-butadiene rubber, in lithium ion-conductive sulfide-type
solid electrolyte molding for lithium **battery**)

RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6

 $\text{H}_2\text{C}=\text{CH}-\text{CH}=\text{CH}_2$

CM 2

CRN 100-42-5

CMF C8 H8

 $\text{H}_2\text{C}=\text{CH}-\text{Ph}$

IC ICM H01B001-06

ICS C01G017-00; H01M006-18; H01M010-40

MEI HUANG EIC1700 REM4B28 571-272-3952

08/18/2006

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 39, 76

ST lithium ion conductive sulfide electrolyte **battery**; solid
state electrolyte lithium sulfide; germanium phosphorus lithium
sulfide solid electrolyte; styrene butadiene rubber sulfide solid
electrolyte; impact resistance solid state ion conductor

IT Styrene-butadiene rubber, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(in lithium ion-conductive sulfide-type solid electrolyte molding
for lithium **battery**)

IT Impact-resistant materials
Ionic conductors
Secondary **batteries**
Solid electrolytes
(lithium ion-conductive sulfide-type solid electrolyte molding
for lithium **battery**)

IT 12025-34-2, Germanium sulfide (GeS₂) 12136-58-2, Lithium
sulfide 140435-84-3, Phosphorus sulfide (P₂S₅)
RL: RCT (Reactant); RACT (Reactant or reagent)
(for prepn. of lithium ion-conductive sulfide-type solid
electrolyte molding for lithium **battery**)

IT 361393-39-7P
RL: IMF (Industrial manufacture); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)
(lithium ion-conductive sulfide-type solid electrolyte molding
for lithium **battery**)

IT 9003-55-8
RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, in lithium ion-conductive sulfide-type
solid electrolyte molding for lithium **battery**)

L62 ANSWER 12 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:575465 HCAPLUS

DOCUMENT NUMBER: 137:143037

TITLE: Method for preparing thin fiber-structured
polymer web

INVENTOR(S): Lee, Wha Seop; Jo, Seong Mu; Chun, Suk Won;
Choi, Sung Won

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
MEI HUANG	EIC1700	REM4B28	571-272-3952	08/18/2006

US 2002100725	A1	20020801	US 2001-14550	200112 14
KR 2002063020	A	20020801	KR 2001-3685	200101 26
JP 2002249966	A2	20020906	JP 2001-382608	200112 17
CN 1367276	A	20020904	CN 2002-102522	200201 25
PRIORITY APPLN. INFO.:			KR 2001-3685	A 200101 26

IT 9003-55-8, Butadiene-styrene
copolymer

RL: DEV (Device component use); PEP (Physical, engineering or
chemical process); PYP (Physical process); PROC (Process); USES
(Uses)

(method for prepg. thin fiber-structured polymer web)

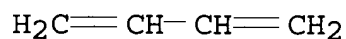
RN 9003-55-8 HCAPLUS

CN Benzene, ethenyl-, polymer with 1,3-butadiene (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



CM 2

CRN 100-42-5

CMF C8 H8



IC ICM B01D039-08

INCL 210503000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 37, 47

ST battery electrolyte layer fiber structured polymer web;
sulfur based secondary **battery** fiber structured
polymer web; lithium secondary battery fiber structured polymer web;
fuel cell fiber structured polymer web; filter fiber structured
polymer web

IT 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9002-89-5,
Polyvinyl alcohol 9002-98-6, PolyAziridine 9003-20-7, Polyvinyl
acetate 9003-55-8, **Butadiene-styrene**
copolymer 9004-34-6, Cellulose, uses 9004-35-7,
Cellulose acetate 9004-36-8 9011-08-9 9011-14-7, Pmma
9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
24937-16-4, Nylon 12 24937-79-9, PvdF 24980-34-5, Ethylene
sulfide polymer 24980-41-4, Caprolactone homopolymer 25014-41-9,
Polyacrylonitrile 25038-59-9, Polyethylene terephthalate, uses
25085-53-4, Isotactic polypropylene 25086-89-9, Vinyl
acetate-vinyl pyrrolidone copolymer 25233-30-1, Polyaniline
25322-69-4, Polypropylene oxide 25569-53-3, Poly(ethylene
succinate) 25749-57-9 26063-00-3, Polyhydroxybutyrate)
26100-51-6, Polylactic acid 26124-68-5, Polyglycolic acid
27083-66-5, Poly(propylene fumarate) 34346-01-5, Glycolic
acid-DL-lactic acid copolymer 50327-22-5 98973-15-0,
Poly(bis-(2-(2-methoxy-ethoxyethoxy))phosphazene 136511-06-3, Meep
RL: DEV (Device component use); PEP (Physical, engineering or
chemical process); PYP (Physical process); PROC (Process); USES
(Uses)
(method for prepg. thin fiber-structured polymer web)

L62 ANSWER 13 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:231016 HCAPLUS

DOCUMENT NUMBER: 136:339451

TITLE: High levels of the onco-protein Gfi-1 accelerate
T-cell proliferation and inhibit activation
induced T-cell death in Jurkat T-cells

AUTHOR(S): Karsunky, Holger; Mende, Ines; Schmidt,
Thorsten; Moroy, Tarik

CORPORATE SOURCE: Institut fur Zellbiologie (Tumorforschung), IFZ,
Universitätsklinikum Essen, Essen, D-45122,
Germany

SOURCE: Oncogene (2002), 21(10), 1571-1579
CODEN: ONCNES; ISSN: 0950-9232

PUBLISHER: Nature Publishing Group

DOCUMENT TYPE: Journal

LANGUAGE: English

CC 15-10 (Immunochemistry)

Section cross-reference(s): 14

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L62 ANSWER 14 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:246074 HCAPLUS

DOCUMENT NUMBER: 126:295564

TITLE: The low current domain of the aluminum/
sulfur battery

AUTHOR(S): Licht, Stuart; Hwang, Jin; Light, Truman S.;
Dillon, Rensl

CORPORATE SOURCE: Department of Chemistry, Technion-Israel
Institute of Technology, Haifa, 32000, Israel

SOURCE: Journal of the Electrochemical Society (1997),
144(3), 948-955

CODEN: JESQAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST aluminum **sulfur battery** secondary low current;
anode aluminum mercury contg electrolyte

IT Battery anodes

Battery electrolytes

Secondary batteries

(low current domain of the aluminum/**sulfur
battery**)

IT 7429-90-5, Aluminum, uses 146340-84-3, Alcan DH50V

RL: DEV (Device component use); USES (Uses)

(anode; low current domain of the aluminum/**sulfur
battery**)

IT 10045-94-0, Mercury nitrate 12058-66-1, Sodium stannate

20661-21-6, Indium hydroxide

RL: DEV (Device component use); USES (Uses)

(electrolyte additive; low current domain of the aluminum/
sulfur battery)

IT 1312-73-8, Potassium sulfide

RL: DEV (Device component use); USES (Uses)

(electrolyte; low current domain of the aluminum/**sulfur
battery**)

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L62 ANSWER 15 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1995:919585 HCAPLUS

TITLE: Common student misconceptions in the field of electrochemistry: Galvanic, Electrolytic, and concentration cells.
AUTHOR(S): Sanger, Michael J.; Greenbowe, Thomas J.
CORPORATE SOURCE: Department Chemistry, Iowa State University, Ames, IA, 50011, USA
SOURCE: Book of Abstracts, 210th ACS National Meeting, Chicago, IL, August 20-24 (1995), Issue Pt. 1, CHED-066. American Chemical Society: Washington, D. C.
CODEN: 61XGAC
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English

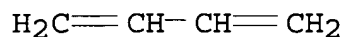
L62 ANSWER 16 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1989:25026 HCAPLUS
DOCUMENT NUMBER: 110:25026
TITLE: Microporous propylene polymer films
INVENTOR(S): Nago, Kuniya; Nakamura, Shunichi
PATENT ASSIGNEE(S): Tokuyama Soda Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 24 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 63108041	A2	19880512	JP 1987-143997	19870611
JP 05083099	B4	19931124		
CA 1311886	A1	19921229	CA 1987-539409	19870611
US 4791144	A	19881213	US 1987-61221	19870612
PRIORITY APPLN. INFO.:			JP 1986-135018	A1 19860612
			JP 1986-136153	A1 19860613

IT 9003-17-2
RL: USES (Uses)
(rubber, hydroxy-terminated, hydrogenated, plasticizers,
propylene polymer contg., for microporous films)
RN 9003-17-2 HCAPLUS
CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0
CMF C4 H6



IC ICM C08J009-00
CC 38-3 (Plastics Fabrication and Uses)
IT 1309-42-8, Kisuma S 4
RL: USES (Uses)
(powds., propylene polymer contg., for microporous films, for
battery separators, Kisuma S-4)
IT 9003-17-2
RL: USES (Uses)
(rubber, hydroxy-terminated, hydrogenated, plasticizers,
propylene polymer contg., for microporous films)

L62 ANSWER 17 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1988:513532 HCAPLUS
DOCUMENT NUMBER: 109:113532
TITLE: Battery electrode materials
INVENTOR(S): Fujii, Masayuki; Toda, Hideo; Wakayama, Tatsuo
PATENT ASSIGNEE(S): Mitsubishi Petrochemical Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63143746	A2	19880616	JP 1986-288934	19861205

PRIORITY APPLN. INFO.:

JP 1986-288934

198612

05

IT 9003-17-2

RL: USES (Uses)

(rubber, **cathodes** from iodine-sulfur-, for
nonaq.-electrolyte **batteries**)

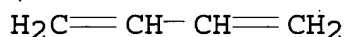
RN 9003-17-2 HCAPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



IC ICM H01M004-36

ICS H01M004-02; H01M004-60; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 39ST **battery cathode sulfur** iodine; polymer
vulcanized iodine **sulfur cathode**

IT Rubber, butadiene, uses and miscellaneous

RL: USES (Uses)

(cathodes from iodine-sulfur-, for
nonaq.-electrolyte **batteries**)IT **Cathodes**(battery, sulfur-iodine-vulcanized polymer,
nonaq.-electrolyte)IT 7704-34-9, **Sulfur**, uses and miscellaneous

RL: USES (Uses)

(cathodes from iodine-vulcanizable polymer-, for
nonaq.-electrolyte **batteries**)

IT 7553-56-2, Iodine, uses and miscellaneous

RL: USES (Uses)

(cathodes from sulfur-vulcanizable polymer-,
for nonaq.-electrolyte **batteries**)

IT 9003-17-2

RL: USES (Uses)

(rubber, **cathodes** from iodine-sulfur-, for
nonaq.-electrolyte **batteries**)

L62 ANSWER 18 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1988:425295 HCAPLUS
DOCUMENT NUMBER: 109:25295
TITLE: Plastic grids and their application in miner's lamp **batteries**
INVENTOR(S): Zhai, Wangsheng; Lu, Yuli; et al.
PATENT ASSIGNEE(S): Jiyuan Miner's Lamp Factory, Henan Province, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 6 pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
CN 86105462	A	19870624	CN 1986-105462	19860826

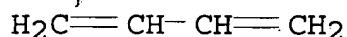
PRIORITY APPLN. INFO.: CN 1986-105462

19860826

IT 9003-56-9
RL: USES (Uses)
(anode grids from copper- and lead-coated, for miner's lamp **batteries**)
RN 9003-56-9 HCAPLUS
CN 2-Propenenitrile, polymer with 1,3-butadiene and ethenylbenzene (9CI) (CA INDEX NAME)
CM 1
CRN 107-13-1
CMF C3 H3 N

$\text{H}_2\text{C}=\text{CH}-\text{C}\equiv\text{N}$

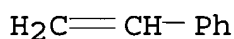
CM 2
CRN 106-99-0
CMF C4 H6



CM 3

CRN 100-42-5

CMF C8 H8



IC ICM H01M004-72

ICS H01M004-66; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38ST lead battery anode **ABS** grid; copper coating **ABS**
anode grid

IT Anodes

(battery, grids for lead-acid, copper- and lead-coated
ABS polymer, for miner's lamp)IT 7439-92-1, uses and miscellaneous 7440-50-8, uses and
miscellaneous

RL: USES (Uses)

(anode grids from **ABS** polymer coated with, for miner's
s lamp **batteries**)

IT 9003-56-9

RL: USES (Uses)

(anode grids from copper- and lead-coated, for miner's
lamp **batteries**)

L62 ANSWER 19 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1987:545704 HCAPLUS

DOCUMENT NUMBER: 107:145704

TITLE: Vapor deposited chrome-copper-chrome laminates
for electromagnetic interference/radio frequency
interference shields

AUTHOR(S): Miller, Walter J.

CORPORATE SOURCE: Stokes Div., Pennwalt Corp., Philadelphia, PA,
19120, USASOURCE: Journal of Vacuum Science & Technology, A:
Vacuum, Surfaces, and Films (1987), 5(4, Pt. 4),
2706-8

CODEN: JVTAD6; ISSN: 0734-2101

DOCUMENT TYPE: Journal
LANGUAGE: English
CC 76-14 (Electric Phenomena)

L62 ANSWER 20 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1987:523704 HCAPLUS
DOCUMENT NUMBER: 107:123704
TITLE: Ultraviolet and visible fluorescence produced by
controlled electron impact on sulfur dioxide
AUTHOR(S): Miller, K., Jr.; Becker, K.
CORPORATE SOURCE: Dep. Phys., Lehigh Univ., Bethlehem, PA, 18015,
USA
SOURCE: Canadian Journal of Physics (1987), 65(5), 530-4
CODEN: CJPHAD; ISSN: 0008-4204
DOCUMENT TYPE: Journal
LANGUAGE: English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
IT Fluorescence
(cathodo-, of sulfur dioxide and its fragment
after controlled)

L62 ANSWER 21 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1986:482193 HCAPLUS
DOCUMENT NUMBER: 105:82193
TITLE: Rapid testing of beta alumina ceramics
AUTHOR(S): Sudworth, J. L.
CORPORATE SOURCE: Beta Res. und Dev. Ltd., Sinfen Derby, DE2 9GN,
UK
SOURCE: Journal of Power Sources (1986), 17(1-3), 188-94
CODEN: JPSODZ; ISSN: 0378-7753
DOCUMENT TYPE: Journal
LANGUAGE: English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57
ST alumina electrolyte testing battery; sodium sulfur
battery electrolyte testing
IT 1305-78-8, uses and miscellaneous 12057-24-8, uses and
miscellaneous
RL: USES (Uses)
(alumina electrolytes contg., rapid testing of, for sodium-
sulfur battery)
IT 12005-16-2
RL: USES (Uses)
(electrolytes, rapid testing of, for sodium sulfur
battery)

L62 ANSWER 22 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1985:446770 HCAPLUS
 DOCUMENT NUMBER: 103:46770
 TITLE: Electron emission and surface composition of
 osmium and osmium-tungsten coated dispenser
 cathodes
 AUTHOR(S): Brion, D.; Tonnerre, J. C.; Shroff, A.
 CORPORATE SOURCE: Electron Tube Div., Thomson-CSF,
 Boulogne-Billancourt, F-92102, Fr.
 SOURCE: Applications of Surface Science (1977-1985)
 (1985), 20(4), 429-56
 CODEN: ASUSDD; ISSN: 0378-5963
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 CC 76-12 (Electric Phenomena)
 Section cross-reference(s): 66

L62 ANSWER 23 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1984:14533 HCAPLUS
 DOCUMENT NUMBER: 100:14533
 TITLE: Article having a layer of a nickel-phosphorus
 alloy and coated with a protective layer
 INVENTOR(S): Krijl, Gerrit; Van de Leest, Renaat Edmond
 PATENT ASSIGNEE(S): N. V. Philips' Gloeilampenfabrieken, Neth.
 SOURCE: Eur. Pat. Appl., 10 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 94127	A1	19831116	EP 1983-200633	198305 03
EP 94127	B1	19851121		
R: DE, FR, GB, IT, NL				
NL 8201849	A	19831201	NL 1982-1849	198205 06
US 4497877	A	19850205	US 1983-491101	198305 03
JP 58207392	A2	19831202	JP 1983-79227	198305

06

JP 02016398 B4 19900417
US 4545871 A 19851008 US 1984-667936

198411
02

PRIORITY APPLN. INFO.:

NL 1982-1849

A

198205
06

US 1983-491101

A3

198305
03

IC C25D011-38; C25D011-36; C23F007-08; C23F007-26
CC 72-8 (Electrochemistry)

L62 ANSWER 24 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1980:60509 HCAPLUS

DOCUMENT NUMBER: 92:60509

TITLE: Electrocoating of an article

INVENTOR(S): Kubo, Akira; Todoroki, Nobuaki; Teshima,
Yasuhiko; Kuranami, Nobuo; Tsutsui, Nobukazu;
Kasai, Akio

PATENT ASSIGNEE(S): Shinto Paint Co., Ltd., Japan; Honda Motor Co.,
Ltd.

SOURCE: Ger. Offen., 20 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2919130	A1	19791115	DE 1979-2919130	197905 11
DE 2919130	B2	19801113		
DE 2919130	C3	19860417		
JP 54148037	A2	19791119	JP 1978-56009	197805 11
JP 56020359	B4	19810513		
JP 54148038	A2	19791119	JP 1978-56010	197805 11

US 4208262 A 19800617 US 1979-37853

197905
10

PRIORITY APPLN. INFO.:

JP 1978-56009 A

197805
11

JP 1978-56010 A

197805
11

IT 9003-17-2D, anionic derivs.

RL: USES (Uses)

(electrocoating with, on surfaces electrocoated with epoxy resins
in powd. form, with improved quality)

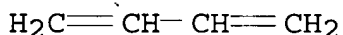
RN 9003-17-2 HCAPLUS

CN 1,3-Butadiene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 106-99-0

CMF C4 H6



IC C25D013-06; B05D003-00

CC 42-7 (Coatings, Inks, and Related Products)

IT 9003-17-2D, anionic derivs.

RL: USES (Uses)

(electrocoating with, on surfaces electrocoated with epoxy resins
in powd. form, with improved quality)

L62 ANSWER 25 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1977:420283 HCAPLUS

DOCUMENT NUMBER: 87:20283

TITLE: Activity and intracellular localization of
lysosomal acid phosphatase in lymphocytes from
patients with Hodgkin's disease,
plasma cell myeloma and
primary polycythemia

AUTHOR(S): Lisiewicz, Jerzy; Astaldi, Giovanni

CORPORATE SOURCE: Inst. Intern. Med., Acad. Med., Krakow, Pol.

SOURCE: Tumori (1976), 62(6), 651-7

CODEN: TUMOAB; ISSN: 0300-8916

DOCUMENT TYPE: Journal

LANGUAGE: English
CC 14-10 (Mammalian Pathological Biochemistry)

L62 ANSWER 26 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1975:117839 HCAPLUS
DOCUMENT NUMBER: 82:117839
TITLE: Analysis of the light emitted from electrodes
during electrode effects in some electrolytic
aqueous solutions
AUTHOR(S): Guilpin, Christian; Garbarz-Olivier, Jocelyne
CORPORATE SOURCE: Lab. Phys. Liq. Ion., Univ. Paris-VI, Paris, Fr.
SOURCE: Journal de Chimie Physique et de Physico-Chimie
Biologique (1974), 71(11-12), 1491-8
CODEN: JCPBAN; ISSN: 0021-7689

DOCUMENT TYPE: Journal
LANGUAGE: French
CC 72-12 (Electrochemistry)
Section cross-reference(s): 73

L62 ANSWER 27 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1965:471445 HCAPLUS
DOCUMENT NUMBER: 63:71445
ORIGINAL REFERENCE NO.: 63:13092b-h,13093a-b
TITLE: Electrolytic hydrodimerization of two different
 α,β -olefinic compounds
INVENTOR(S): Baizer, Manuel M.
PATENT ASSIGNEE(S): Monsanto Co.
SOURCE: 7 pp.
DOCUMENT TYPE: Patent
LANGUAGE: Unavailable
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 3193476		19650706	US 1961-163028	196012 12

INCL 204073000
CC 33 (Aliphatic Compounds)

L62 ANSWER 28 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1963:473603 HCAPLUS
DOCUMENT NUMBER: 59:73603
ORIGINAL REFERENCE NO.: 59:13597a-b
TITLE: Electric transfer of ions in absolute H₂SO₄

AUTHOR(S): Kudra, O. K.; Zhitomirskii, A. N.; Fialkov, Yu. Ya.
CORPORATE SOURCE: Polytech. Inst., Kiev
SOURCE: Doklady Akademii Nauk SSSR (1963), 151(2), 377-9
CODEN: DANKAS; ISSN: 0002-3264
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
CC 15 (Electrochemistry)

L62 ANSWER 29 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1963:452311 HCAPLUS
DOCUMENT NUMBER: 59:52311
ORIGINAL REFERENCE NO.: 59:9459b-c
TITLE: Determination of absolute probabilities of transitions of the line Ba I in a direct current arc
AUTHOR(S): Lebedeva, V. V.
SOURCE: Fiz. Probl. Spektroskopii, Akad. Nauk SSSR, Materialy 13-go [Trinadtsatogo] Soveshch., Leningrad, 1960 (1962), 1, 43-5
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
CC 10 (Spectra and Some Other Optical Properties)
IT 7440-39-3, Barium
(spectrum of, in d.c. arc, **abs.** transition probabilities in)

L62 ANSWER 30 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1962:1607 HCAPLUS
DOCUMENT NUMBER: 56:1607
ORIGINAL REFERENCE NO.: 56:261g-h
TITLE: Mechanism of the cathodic reduction of zinc oxide phase layers on a zinc electrode
AUTHOR(S): Oshe, A. I.; Bagotskii, V. S.
CORPORATE SOURCE: Inst. Electrochem., Moscow
SOURCE: Zhurnal Fizicheskoi Khimii (1961), 35, 1641-2
CODEN: ZFKHA9; ISSN: 0044-4537
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
CC 22 (Electrochemistry)
IT Coating(s)
(anodic, on metal **cathodes**, redn. of)

L62 ANSWER 31 OF 31 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1946:25373 HCAPLUS
DOCUMENT NUMBER: 40:25373
ORIGINAL REFERENCE NO.: 40:4964h-i, 4965a

TITLE: The cathodic overvoltage of copper amalgams in
nitrate solutions
AUTHOR(S): Bonnemay, Maurice; Hamelin, Antoinette
SOURCE: Compt. rend. (1946), 222, 176-7
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
CC 4 (Electrochemistry)

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